

Southern Sudan Medical Journal

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12 lead electrocardiogram in an asymptomatic man. Rhythm changes spontaneously from sinus rhythm to ventricular fibrillation during recording (Contributed by Dr. Mark Connaughton, Consultant Cardiologist, St Mary's Hospital, Newport, Isle of Wight, UK) See the new series on how to read ECGs on page 26.

Contents

Editorial Launching our new website.....22

Main articles

- Mapping the specialist medical workforce for Southern Sudan: devising ways for capacity building *Mayen Achiek and Dario Lado*23
- How to read an electrocardiogram. Part 1: Basic principles of the ECG. The normal ECG *Dallas Price*.....26
- Evidence-based medicine - searching the medical literature. Part 2. *Anne Lancey*29

Short items

- Summary: Moderate malnutrition: do we know how to manage it.....31
- Case study: Answers to the Clinical Quiz.....33

Reports from Southern Sudan

- Profiles: Malaria Consortium and Population Services International Sudan.....33
- Malnutrition in Akobo County. *Medair and Save Children in Southern Sudan*.....35

News and Resources

- Chronic diseases.....35
- HIV and other infections.....37
- Paediatrics/child health.....38
- Surgery.....40
- General resources.....40

WHO chart on hospital care for children41-43

To inform, educate and positively influence the
development of Health Services in the Southern
Sudan

Established in 2008. A publication of the St Mary's Juba hospitals link

Editorial: Launching our new website

Healthcare evolves. Take myocardial infarcts (MI) for example. Thirty years ago, the management was heparin and 'bed rest'. A trial in 1986 showed that intravenous (IV) streptokinase worked in the treatment of MI. In the mid to late 1990's angioplasty and stenting was becoming commonplace. In the first decade of the 21st century drug eluting stents were developed. The number of cardiac drugs has grown from a handful in the 1960's to over a hundred.

As healthcare advances, so too does the Southern Sudan Medical Journal (SSMJ) - previously the Southern Sudan Medical Bulletin. Over the past months we have developed a website specifically to serve and resource clinicians and healthcare workers in Southern Sudan. After much hard work, it is finally here – a website for you which is free to access and relevant to you.

We have deliberately kept away from flashy graphics that will not work on the internet connection speeds in Southern Sudan whilst maintaining a professional design. We hope that the website will allow more healthcare workers to read and enjoy the journal.

From <http://www.southernsudanmedicaljournal.com> you can access all the archive of the Bulletin/Journal, as well as individual articles. These are separated into 'News', 'Research' and 'Clinical Guidance' to help you find what you need. You can download the individual articles (as well as the full journal) as separate printable PDF files – so you can print out only what you need.

As the SSMJ embraces new change, its aims and objectives remain the same. Our goal has always been and will always be, *“to inform, educate and positively influence the development of healthcare services in Southern Sudan”*.

We hope you like the changes and the website. We would love to hear from you if you do like the site or have suggestions on how we can make it better.

Drs David Attwood and James Ayrton

Email – admin@southernsudanmedicaljournal.com

The Southern Sudan Medical Journal (previously Southern Sudan Medical Bulletin) is a quarterly publication intended for Healthcare Professionals working in the Southern Sudan and for those Healthcare Professionals in other parts of the world seeking information on health in the Southern Sudan.

It aims to offer education and information in all specialities and identify research that will inform the development of Health Services in the Southern Sudan. We plan to include reports of original research, critical/systematic reviews, case reports, clinical photographic materials, obituaries, letters to the Editor, use of drugs, medical news of public interest, nutrition matters, public health issues and stories of the health services in the Southern Sudan in the past.

The Journal is a publication of the St Mary's Juba link. It is published in mid-February, May, August and November and is free online at www.southernsudanmedicaljournal.com

We encourage readers to print copies and pass them to colleagues.

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Mapping the specialist medical workforce for Southern Sudan: Devising ways for capacity building

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Introduction

The basic hospital package of care service (BHPCS)¹, commissioned by the Department of Curative Medicine in the Government of Southern Sudan (GOSS) and written by specialists of the St Mary's Hospital–Juba Teaching Hospital Link in January 2010, identified a severe lack of doctors at specialist level. It recommends that the minimum requirements of specialists at *each* of the three main hospitals in South Sudan over the next five years are: medicine **6**, surgery **3**, orthopaedics **2**, urology **1**, paediatrics **6**, obstetrics and gynaecology **6**, anaesthesia **4**, ophthalmology **4**, head and neck surgery **4**, emergency medicine **2**, radiology **2 - 4**, pathology **4**, oncology **2** and psychiatry **4**. These numbers (i.e.150-156) would enable sub-specialisation and provide the training needed to produce more specialists. This may take longer to achieve at Wau and Malakal due to insufficiently developed infrastructure.

It is estimated that there are approximately 500 Southern Sudanese doctors with basic medical degrees but without postgraduate training. Most of these doctors work either in private practice or undertake administrative posts with non-governmental organisations (NGOs) in South or North Sudan.

There is no structured postgraduate programme or continuing professional development (CPD) system, into which doctors may slot in order to pursue a programme of training in Southern Sudan. Until there is a structured system with enough trainers in place, South Sudan will struggle for years to offer specialist services to its people. Such services are currently available at great cost (e.g. approximately \$25,000 per person) from neighbouring African countries, South Africa, Jordan, Egypt, the United Kingdom, and occasionally, the United States and India. This referral service is not available to emergencies as most people with acute illnesses die within the first twenty-four hours².

In the absence of concrete data on the numbers of trained doctors (those who have undergone postgraduate or accredited training in a speciality), we (MA & DL) set out to establish the numbers of trained doctors in various specialities in South Sudan, North Sudan, East and Central Africa, Australia, Canada, United States, United Kingdom, Ireland and Scandinavia.

The aim of this study is to identify those doctors who may be interested to act as trainers in a training programme for postgraduate doctors in medicine in South Sudan. It is vital that a critical mass of trainers is in place to start structured postgraduate training to ensure self-sufficiency in trained medical manpower.

Methodology

We checked the names of South Sudanese doctors in the Sudan Medical Council Register, the General Medical Council Register in the United Kingdom, Sudanese Surgeons' Association Register, Sudanese Society of Physicians' Register and the Kenyan Medical Council Register. We also personally communicated with colleagues in countries where South Sudanese doctors work.

We recorded only postgraduate qualifications and the relevant speciality but excluded personal data for confidentiality. Where we communicated by telephone or email, we obtained verbal consent to use the information. It will not be possible to trace individual identities using the data we present in this paper.

Results

We identified **80** trained specialists from South Sudan in different specialities. Figure 1 shows the distribution by speciality: surgery has the highest number **26**, followed by obstetrics and gynaecology **19**, general medicine **18**, paediatrics and child health **6**, radiology **3**, pathology **3**, psychiatry **3** and dermatology and anaesthesia **1** each. Of these **65** are currently active and **15** are retired or near retirement but in private practice.

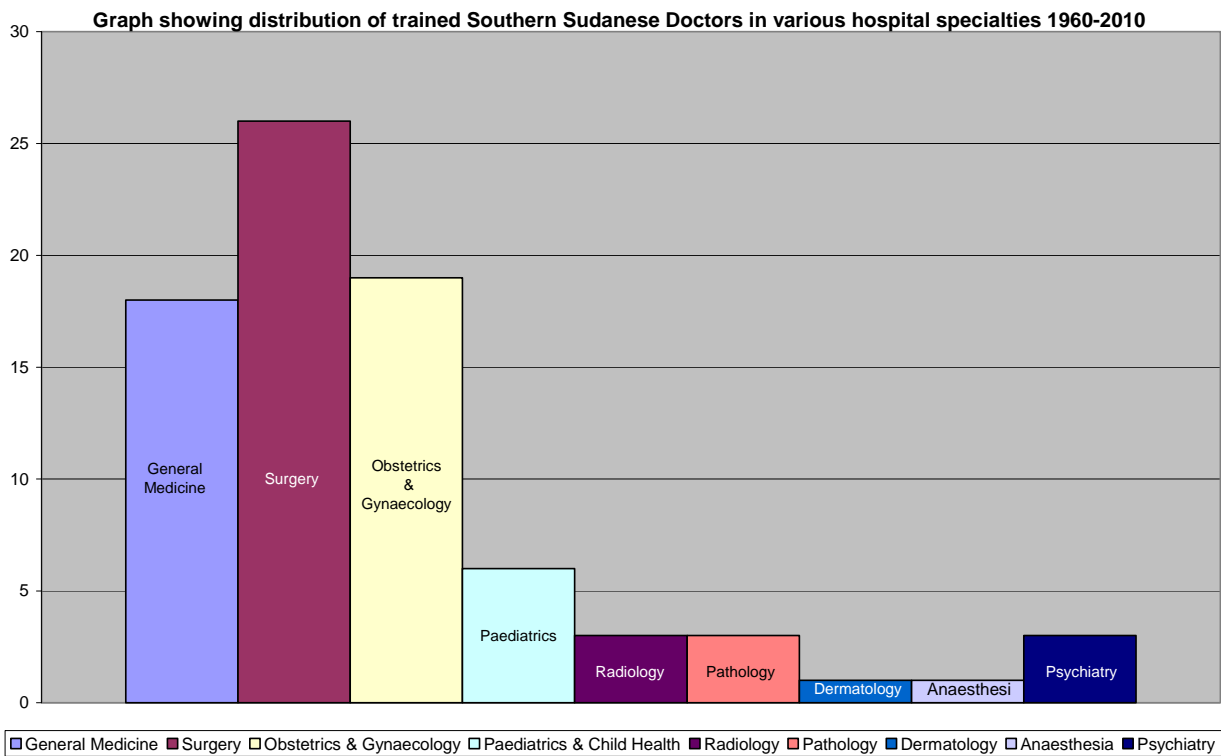


Figure 1. Distribution of trained Southern Sudanese doctors by speciality

Table 1 Location and status of southern Sudanese doctors by speciality

Specialities	⁽¹⁾ Location and ⁽²⁾ Status				Total
	South Sudan	North Sudan	Abroad	Retired/private practice	
General medicine	8	1	9	0	18
Surgery	8	2	4	10	24 ⁽³⁾
Obstetrics/Gynaecology	10	5	4	0	19
Paediatrics	4	0	1	1	6
Radiology	2	0	1	0	3
Pathology	1	0	2	0	3
Dermatology	1	0	0	0	1
Anaesthesia	0	0	1	0	1
Psychiatry	0	2	1	0	3
Total	34	10	23	11	78³

(1)Where practitioner currently resident or practising, (2) already retired and/or in private practice [4 may be nearing retirement], (3) data missing for 2

The numbers (in a few cases approximate) of these specialists by location and status is given in Table 1 and in more detail below.

General medicine 18:

- In South Sudan 8
- In North Sudan 1
- Outside Sudan 9 (East/Southern Africa 3, UK/Ireland 5, USA/Canada ~1).

All are practising General Internal Medicine but 9 were sub-specialists (cardiologist 1, stroke physician/geriatrician 1, geriatrician 1, gastroenterologist 3 and chest physician 3).

We found no physicians practising as nephrologists, hepatologists, rheumatologists, neurologists,

endocrinologists, oncologists, haematological medicine or intensive care physicians.

Surgery 24 specialists (no data for 2 more):

- Orthopaedics 3 (retired in private practice 1, in Norway 1, in the Sudanese Army Medical Corps 1).
- ENT 2 (in South Sudan 1, in Khartoum 1).
- Ophthalmology 3 (in South Sudan 1, retired or nearing retirement 2).

Of the remaining 16 surgeons:

- In South Sudan 8 (at the University of Bahr El Ghazal 3, in the Sudan Peoples Liberation Army Medical Corps 2, elsewhere 3).
- In North Sudan 4
- Outside Sudan 4 (in UK 1, in East and Central Africa 3).

Obstetrics and gynaecology 19:

- In South Sudan 11 (JTH 5, SPLA Medical Corps 1, SPLM (Commissioner) 1, Yei (private) 1, Unity State 1, Wau Teaching Hospital 1, NGO (not a practising) 1).
- In North Sudan 5
- Outside Sudan 4 (in UK/Ireland 2, in East/Central/West Africa ~2).

Paediatrics and child health 6:

- In South Sudan 4 (in Juba 2, at the University of Bahr El Ghazal 2)
- Outside Sudan 1 (in France)
- Retired 1.

Radiology 3:

- In South Sudan 2
- Outside Sudan (in UK).

All in private practice.

Pathology 3:

- In South Sudan 1 (at the University of Bahr El Ghazal)
- Outside Sudan (in Norway 1, in Canada 1).

Dermatology 1: In South Sudan

Anaesthesia 1: In USA

- There is 1 trainee at Makerere University Medical School undergoing postgraduate training.

Psychiatry 3:

- In Sudan 2
- Outside Sudan 1 (previously in Zimbabwe, relocated to Tanzania).

Discussion

The method used for collecting these data was by no means exhaustive and it is possible that some trained doctors might have been inadvertently excluded from the count. For example the public health specialists and dentists have not been counted but should be included.

For a population of 10,000,000 people, the number of specialists from South Sudan working there is negligible and does not meet the WHO minimum standard of 20 doctors per 100,000 inhabitants³. However the WHO minimum standard does not differentiate between trained and untrained doctors. It is estimated that there are 500 South Sudanese doctors living within South Sudan with basic medical degrees but without appropriate postgraduate training.

We propose that the government of Southern Sudan introduce structured postgraduate training in hospitals in Wau, Malakal and Juba. This should give initial training in South Sudan with top-up experience in developed western countries prior to the doctors returning home to offer ongoing specialist services.

We also propose that, because there is severe shortage of trainers, specialist doctors of South Sudan origin working outside the country offer some of their time to train colleagues in South Sudan in order to kick start the training programme. The government of Southern Sudan needs to offer incentives to trained doctors to enable them to remain in the country. Schemes by the United Kingdom Department for International Development that supplement salaries of healthcare professionals in Malawi in order to encourage retention⁴ needs to be looked at as soon as possible. NGOs should incorporate training into their contracts when employing medically qualified personnel to ensure that they continue professional development and increase the critical mass of trained doctors in Southern Sudan.

We suggest that a three-day conference be held of all the above specialists and the authorities in the GOSS Ministry of Health so that we can start to develop a framework for improving our national Healthcare Service.

References

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4. Gordon M. Malawi's emergency human resources program: an overview. *Paper given at the World Health Organisation, Organisation for Economic Co-operation & Development Seminar on Health worker migration. Geneva, 21st October 2008.* http://www.who.int/hrh/migration/Matt_Gordon.pdf

We thank Dr Eluzai Hakim, Medical Advisor to the St Mary's Hospital Juba Link for reading this manuscript and suggesting improvements and Ann Burgess (Editorial Advisor) for editing it ready for publication.

Note: In the next issue of the Journal we hope to discuss the present situation regarding numbers of nurses in Southern Sudan.

How to read an electrocardiogram (ECG). Part 1: Basic principles of the ECG. The normal ECG

Dallas Price, Consultant Cardiologist, St Mary's Hospital, Isle of Wight, UK

Introduction

The electrocardiogram (ECG) is one of the simplest and oldest cardiac investigations available, yet it can provide a wealth of useful information and remains an essential part of the assessment of cardiac patients. With modern machines, surface ECGs are quick and easy to obtain at the bedside and are based on relatively simple electrophysiological concepts. However junior doctors often find them difficult to interpret.

This is the first in a series of articles that aim to:

- Help readers understand and interpret ECG recordings.
- Reduce some of the anxiety juniors often experience when faced with an ECG.

Basic principles

What is an ECG?

An ECG is simply a representation of the electrical activity of the heart muscle as it changes with time, usually printed on paper for easier analysis. Like other muscles, cardiac muscle contracts in response to electrical *depolarisation* of the muscle cells. It is the sum of this electrical activity, when amplified and recorded for just a few seconds that we know as an ECG.

Basic electrophysiology of the heart (see Figure 1)

The normal cardiac cycle begins with spontaneous depolarisation of the sinus node, an area of specialised tissue situated in the high right atrium (RA). A wave of electrical depolarisation then spreads through the RA and across the inter-atrial septum into the left atrium (LA).

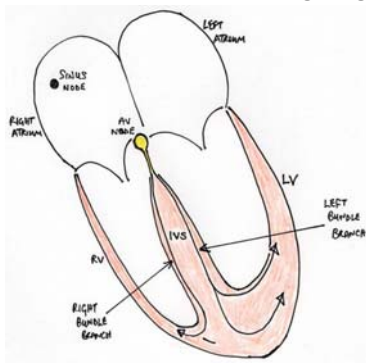


Figure 1. Basic electrophysiology of the heart

The atria are separated from the ventricles by an electrically inert fibrous ring, so that in the normal heart the only route of transmission of electrical depolarisation from atria to ventricles is through the atrioventricular (AV) node. The AV node delays the electrical signal for a short time, and then the wave of depolarisation spreads down the interventricular septum (IVS), via the bundle of His and the right and left bundle branches, into the right (RV) and left (LV) ventricles. Hence with normal conduction the two ventricles contract simultaneously, which is important in maximising cardiac efficiency.

After complete depolarisation of the heart, the myocardium must then *repolarise*, before it can be ready to depolarise again for the next cardiac cycle.

Electrical axis and recording lead vectors (see Figures 2 and 3)

The ECG is measured by placing a series of electrodes on the patient's skin – so it is known as the 'surface' ECG.

The wave of electrical depolarisation spreads from the atria down through the IVS to the ventricles. So the direction of this depolarisation is usually from the superior to the inferior aspect of the heart. The direction of the wave of depolarisation is normally towards the left due to the leftward orientation of the heart in the chest and the greater muscle mass of the left ventricle than the right. This overall direction of travel of the electrical depolarisation through the heart is known as the *electrical axis*.

A fundamental principle of ECG recording is that when the wave of depolarisation travels toward a recording lead this results in a positive or upward deflection. When it travels away from a recording lead this results in a negative or downward deflection.

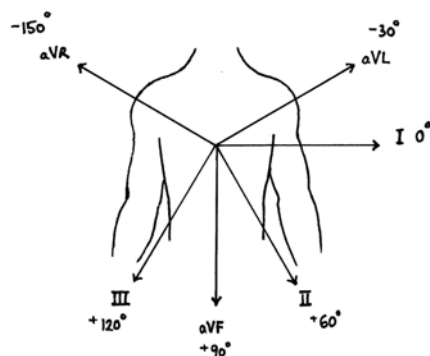


Figure 2. Orientation of the limb leads showing the direction from which each lead 'looks' at the heart

The electrical axis is normally downward and to the left but we can estimate it more accurately in individual patients if we understand from which 'direction' each recording lead measures the ECG.

By convention, we record the standard surface ECG using 12 different recording lead 'directions,' though rather confusingly only 10 recording electrodes on the skin are required to achieve this. Six of these are recorded from the chest overlying the heart – *the chest or precordial leads*. Four are recorded from the limbs – *the limb leads*. It is essential that each of the 10 recording electrodes is placed in its correct position, otherwise the appearance of the ECG will be changed significantly,

preventing correct interpretation.

The limb leads record the ECG in the coronal plane, and so can be used to determine the electrical axis (which is usually measured only in the coronal plane). The limb leads are called leads I, II, III, AVR, AVL and AVF. Figure 2 shows the relative directions from which they 'look' at the heart. A horizontal line through the heart and directed to the left (exactly in the direction of lead I) is conventionally labelled as the reference point of 0 degrees (0°). The directions from which other leads 'look' at the heart are described in terms of the angle in degrees from this baseline.

The electrical axis of depolarisation is also expressed in degrees and is normally in the range from -30° to +90°. A detailed explanation of how to determine the axis is beyond the scope of this article but the principles mentioned here should help readers to understand the concepts involved.

The chest leads record the ECG in the transverse or horizontal plane, and are called V1, V2, V3, V4, V5 and V6 (see Figure 3).

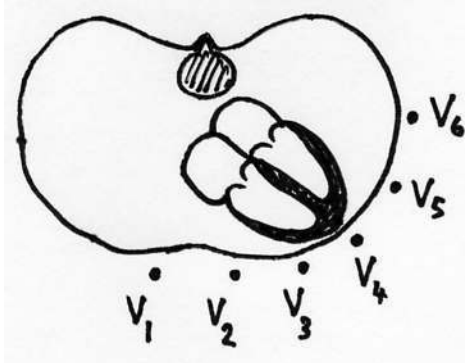


Figure 3. Transverse section of the chest showing the orientation of the six chest leads in relation to

Voltage and timing intervals

It is conventional to record the ECG using standard measures for amplitude of the electrical signal and for the speed at which the paper moves during the recording. This allows:

- Easy appreciation of heart rates and cardiac intervals and
- Meaningful comparison to be made between ECGs recorded on different occasions or by different ECG machines.

The amplitude, or voltage, of the recorded electrical signal is expressed on an ECG in the vertical dimension and is measured in millivolts (mV). On standard ECG paper 1mV is represented by a deflection of 10 mm. An increase in the amount of muscle mass, such as with left ventricular hypertrophy (LVH), usually results in a larger electrical depolarisation signal, and so a larger amplitude of vertical deflection on the ECG.

An essential feature of the ECG is that the electrical activity of the heart is shown as it varies with time. In other words we can think of the ECG as a graph, plotting electrical activity on the vertical axis against time on the horizontal axis. Standard ECG paper moves at 25 mm per second during real-time recording. This means that when looking at the printed ECG a distance of 25 mm along the horizontal axis represents 1 second in time.

ECG paper is marked with a grid of small and large squares. Each small square represents 40 milliseconds (ms) in time along the horizontal axis and each larger square contains 5 small squares, thus representing 200 ms. Standard paper speeds and square markings allow easy measurement of cardiac timing intervals. This enables calculation of heart rates and identification of abnormal electrical conduction within the heart (see Figure 4).

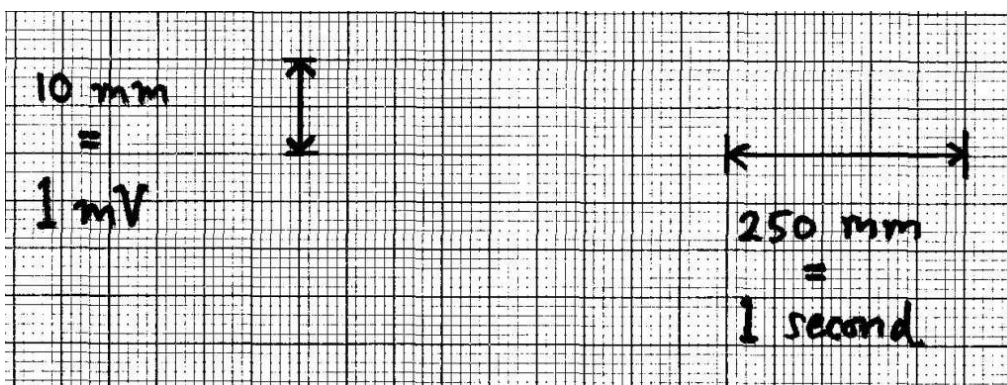


Figure 4. Sample of standard ECG paper showing the scale of voltage, measured on the vertical axis, against time on the horizontal axis

The normal ECG

It will be clear from above that the first structure to be depolarised during normal sinus rhythm is the right atrium, closely followed by the left atrium. So the first electrical signal on a normal ECG originates from the atria and is known as the **P wave**. Although there is usually only one P wave in most leads of an ECG, the P wave is in fact the sum of the electrical signals from the two atria, which are usually superimposed.

There is then a short, physiological delay as the atrioventricular (AV) node slows the electrical depolarisation before it proceeds to the ventricles. This delay is responsible for the PR interval, a short period where no electrical activity is seen on the ECG, represented by a straight horizontal or ‘isoelectric’ line.

Depolarisation of the ventricles results in usually the largest part of the ECG signal (because of the greater muscle mass in the ventricles) and this is known as the **QRS complex**.

- The Q wave is the first initial downward or ‘negative’ deflection.
- The R wave is then the next upward deflection (provided it crosses the isoelectric line and becomes ‘positive’).
- The S wave is then the next deflection downwards, provided it crosses the isoelectric line to become briefly negative before returning to the isoelectric baseline.

In the case of the ventricles, there is also an electrical signal reflecting repolarisation of the myocardium. This is shown as the **ST segment** and the **T wave**. The ST segment is normally isoelectric, and the T wave in most leads is an upright deflection of variable amplitude and duration (see Figures 5 and 6).

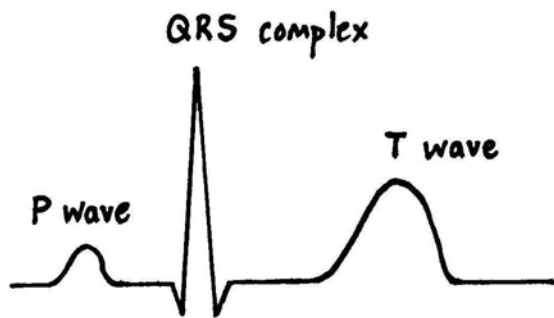


Figure 5. The major waves of a single normal ECG pattern

Normal intervals

The recording of an ECG on standard paper allows the time taken for the various phases of electrical depolarisation to be measured, usually in milliseconds. There is a recognised normal range for such ‘intervals’:

- **PR interval** (measured from the beginning of the P wave to the first deflection of the QRS complex). Normal range 120 – 200 ms (3 – 5 small squares on ECG paper).
- **QRS duration** (measured from first deflection of QRS complex to end of QRS complex at isoelectric line). Normal range up to 120 ms (3 small squares on ECG paper).

end of T wave at isoelectric line). Normal range up to 440 ms (though varies with heart rate and may be slightly longer in females).

- **QT interval** (measured from first deflection of QRS complex to

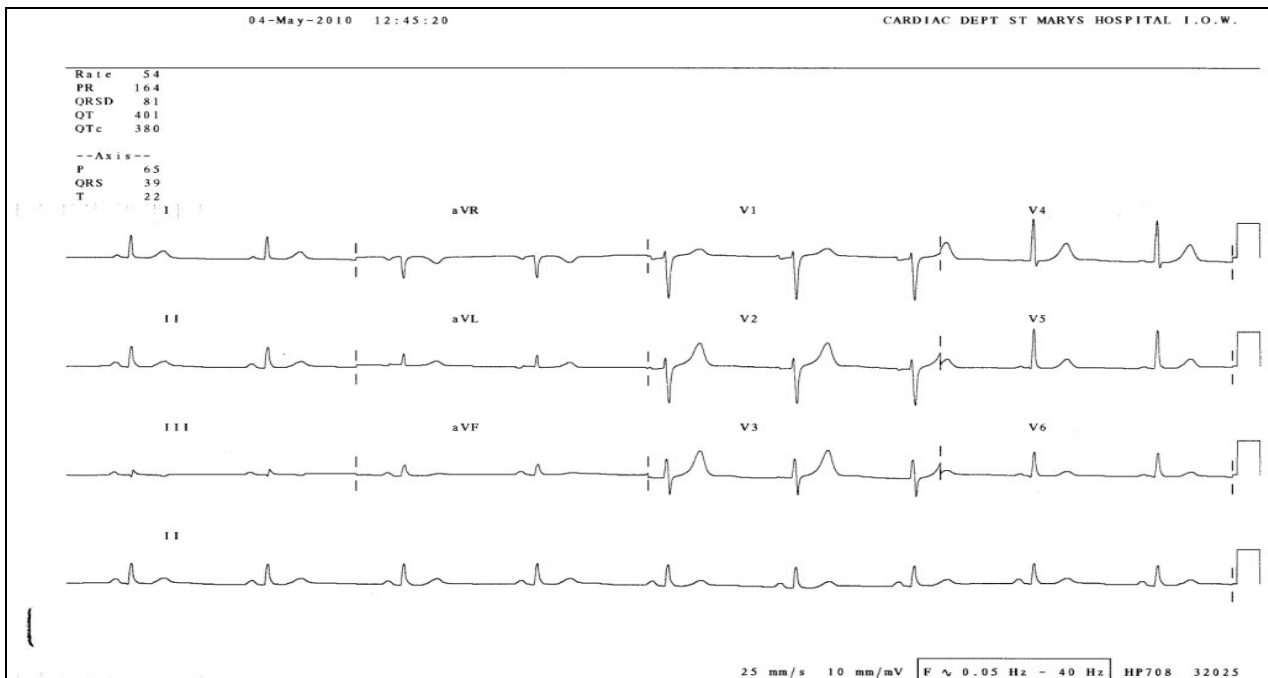


Figure 6. Example of a normal 12 lead ECG; notice the downward deflection of all signals recorded from lead aVR. This is normal, as the electrical axis is directly away from that lead

Heart rate estimation from the ECG

Standard ECG paper allows an approximate estimation of the heart rate (HR) from an ECG recording. Each second of time is represented by 250 mm (5 large squares) along the horizontal axis.

So if the number of large squares between each QRS complex is:

- 5 - the HR is 60 beats per minute.
- 3 - the HR is 100 per minute.
- 2 - the HR is 150 per minute.

Evidence-based medicine - searching the medical literature. Part 2

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In the last issue I covered the use of PubMed to retrieve *primary sources* of evidence (individual research studies). However, if you need quick or more definite answers to your clinical questions you may prefer to start with *secondary sources* - where individual studies have already undergone analysis and have often been compared with others to provide a summarised, more definitive conclusion. In Figure 1 this is referred to as '*filtered information*', although of course individual studies published in journals will often have been peer reviewed before publication, so have undergone a basic level of filtering.

As explained by Dr Hakim in the editorial of Southern Sudan Medical Journal 3(1) there is an agreed hierarchy of 'levels of evidence', those nearer the top in Figure 1 are likely to provide the most reliable evidence - and it is these that we will concentrate on here.

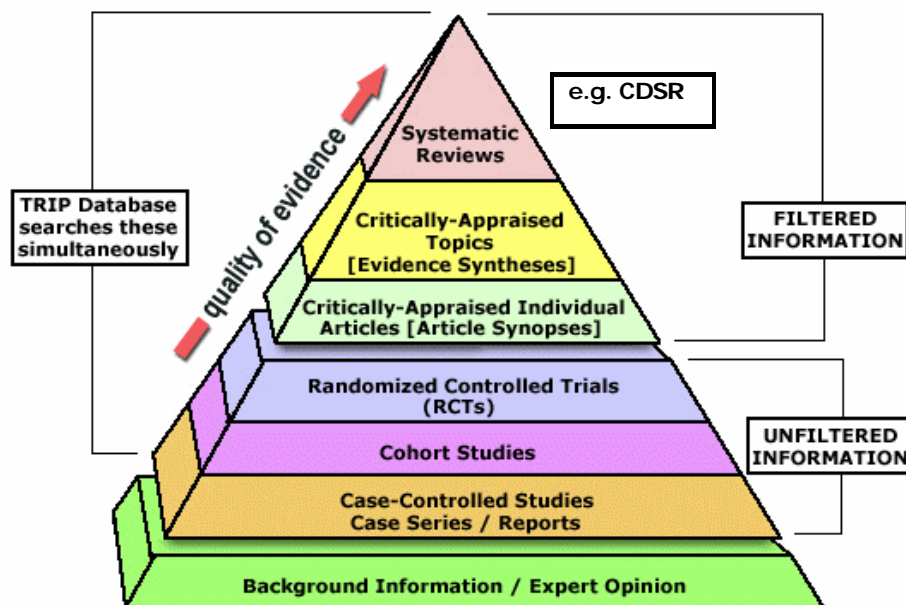


Figure 1. Hierarchy of levels of evidence (Source: www.ebmpyramid.org/samples/complicated.html)

The Cochrane Database of Systematic Reviews (CDSR)

CDSR is one of several databases within The Cochrane Library, found at www.thecochranelibrary.com. The Full Text version is available to those eligible through HINARI¹ or ISAP². Alternatively everyone can access free Summaries via www2.cochrane.org/reviews/ but searching on this view is not as successful. The Cochrane Reviews are only available via the websites above, they are not published anywhere in print, so if you come across a reference to one (e.g. from PubMed), you will have to search here for the full text.

The Cochrane Reviews aim to:

- investigate the effects of interventions on prevention, treatment and rehabilitation or
- assess the accuracy of diagnostic tests for particular conditions and for specific patient groups.

Although the Cochrane Collaboration is based in York, UK, the researchers are truly international and aim for global coverage and inclusion of issues relevant to all countries and contexts. As the CDSR title indicates, reviews in this database adhere to a strict and rigorous 'protocol' set out for how the research articles are found, reviewed (critiqued/appraised) and the results calculated. This means all are done by the same *systematic* method to remove bias and ensure the quality of reviewing is maintained. This is not necessarily the case with reviews from other organisations or authors.

About 4,000 Cochrane Reviews are completed and another 2,000 are in progress (labelled 'Protocols') – but progress can be slow as most reviewers are volunteers. Therefore it is best to ignore or filter out the Protocols (marked with light blue) when searching.

The other limitation on finding a Cochrane Review is that they only review *controlled trials* - so any

subject where this is not a suitable methodology is not included. To see a list of subjects covered browse by topic/Cochrane Group. [If you are in the Full Text version the topics should be listed on the left-hand side of the screen, if looking at the free Summaries click By Topic, then for sub-topics click here].

Instead of searching through the topics you can enter a key word in the search box. This is the best way to search on the Full Text version. But it is not so useful on the free Summaries website where you get many repeat hits. If you use a phrase enter it within quotation marks e.g. "breast feeding". This is good practice in all website searches to avoid the two words being found independently of each other. If you put in more than one word the results will be Reviews with both words included somewhere, but in any keyword search there will be quite a few false hits. However it is usually easy to skim down the results titles quickly to pick out relevant ones.

Note: if you are using the Full Text version of CDSR make sure that you have some hits beside the Cochrane Reviews heading in the top panel of the screen. If there have been no hits the results listed will be from one of the other databases, and not be Cochrane Reviews.

Results will be listed in 'best match' order, but there are options to change to 'date' or 'alphabetical' order at the top of the list on the right-hand side. Changing to Date order will display the most recent first. However it is important to check the dates of each Review very carefully as they give two dates - one when that version was published online, and one when the content was last reviewed as being up-to-date, and these may be very different. Some Reviews will indicate that they have been withdrawn, although still showing on your hitlist.

Whether in the Summaries or the Full Text version, click on the Review's title to see the abstract. This gives:

- The type of review (e.g. Intervention) title.
- Authors and their contacts.
- The Cochrane Group it is part of.
- Date of publication.
- Date of currency review.

The citation is also written out. Copy this exactly when referencing the Review in any context - numbers and all!

Moving down the abstract you will note that the 'method' section explains how the literature search was done (search strategy) and the criteria by which papers were included in the Review. It is vital for a rigorous systematic review that all published and

unpublished studies are included, so database searches and hand searches of journals will have been done, plus following up contacts. Each individual research paper will then have been critically appraised for the quality of study design and how it was carried out, against the agreed Cochrane set protocols.

The 'results' section will give an overview of how many of the trials met the strict inclusion criteria (others having been rejected), and the outcome of *meta-analysis* of the data. A meta-analysis is a way of combining data from more than one trial to calculate a statistic of net overall benefit of the treatment or intervention³

The 'conclusion' is then stated giving a balanced and impartial summary of effectiveness based on all existing research. Sometimes insufficient data will have been found to come to a conclusion. So there is usually a further conclusion that more research is needed.

Using the Full Text view there is a clickable index of the contents of the paper on the left-hand panel, or the option to show the Review in pdf. As mentioned above, the 'method' section is about the literature review and the 'results' section gives details of why each paper was included or rejected.

Beware: many of the Reviews are more than 20 pages long, plus additional tables and charts. So do not press the print button before thinking!

To print just the sections you need (e.g. abstract, background, discussion, conclusions, references) either:

- Choose the pages from the pdf version or
- Highlight sections with your mouse and use file/print/selection (as with printing from any website).

Note that the references listed first are those of studies *included* followed by those rejected.

More detailed 'advanced' searching, saving searches etc. is possible on the Full Text view (see the top right-hand corner), but usually the simple searching with keywords or by topic is sufficient.

Other sources of secondary evidence

There are many other sources of summarised and reviewed literature. All aim to give quick and easy answers to common clinical questions from a single search site. As indicated in Figure 1 some of these (such as TRIP) include references to secondary evidence such as the Cochrane Reviews together with primary studies and other literature. There are usually filters on the screen to choose which type of information you require. Simple keyword searching is all you need - but remember those "quotation

marks" for phrases and the wildcard/truncation symbol * to get any ending on the stem of a word e.g. surg* (for surgery, surgical - but possibly getting unwanted surgig, surged, etc.).

Freely available

- **TRIP** (Turning Evidence into Practice) www.tripdatabase.com - note the new tick box at the bottom of the filter column on the right to limit to items directly relevant to developing countries.
- **NHS Evidence** www.evidence.nhs.uk - parts of this are restricted, but much of the information is freely available.
- **Bandolier** www.medicine.ox.ac.uk/bandolier/knowledge.html.
- **Intute** www.intute.ac.uk - this has some reviews and articles amongst other more varied web resources. If you have a good internet connection there is also a useful 'virtual training suite' giving further guidance in web searching for medical information and training resources.

Via HINARI

- **Best Practice** bestpractice.bmj.com.
- **Clinical Evidence** www.clinicalevidence.bmj.com

and much more...

More local evidence

For a more local flavour try these free resources - both give primary research and some reviews:

- **AIM** (African Index Medicus) - an African equivalent of PubMed

indexmedicus.afro.who.int abstracts and some full text available. Click **Database** on the left-hand panel.

- **AJOL** (African Journals Online) <http://ajol.info/> - abstracts and 3 free full text articles per month - use the search box on the top right, or Browse the Journals by topic, country or alphabetically.

So, there is lots of good quality evidence available to apply to your practice... Obviously secondary evidence will not be available to answer all your questions, but if it is then it will be more reliable than one individual study. Happy searching!

Notes

1. HINARI (Access to Research Initiative) provides free or very low cost online access to the major journals in biomedical and related social sciences to local, not-for-profit institutions in developing countries (including Southern Sudan). www.who.int/hinari/about/en
2. ISASP (International Network for the Availability of Scientific Publications) see this link for more detail about availability in Sudan www.inasp.info/file/c09571fe8890329e7f72f9e2436f1079/Sudan.html?country=700a088657db6c6153375b7fa8c05836
3. For more information on meta-analysis see www.medicine.ox.ac.uk/bandolier/painres/download/whatis/Meta-An.pdf

Moderate malnutrition: do we know how to manage it?

Prepared from 'Proceedings of the WHO/UNICEF/United Nations High Commissioner for Refugees Consultation on the Management of Moderate Malnutrition in children under 5 years of age'¹

There are no recent international guidelines for the management of moderate malnutrition in spite of the fact that it:

- Increases the risk of death from common diseases and may result in severe acute malnutrition and/or severe stunting (both life-threatening conditions).
- Is likely to be associated with more nutrition-related deaths than severe malnutrition.

Moderate malnutrition (see Figure 1) includes all children with:

- moderate wasting: weight-for-height between -2 and -3 z scores of the WHO growth standards² or
- moderate stunting: height-for-age between -2 and -3 z scores.

Most of these children will be moderately underweight: weight-for-age between -2 and -3 z scores.

This paper summarised some of the findings from a WHO consultation on the management of moderate malnutrition. The overall conclusion is that more data are needed before international guidelines can be finalised. Some important findings and suggestions from the consultation are listed below.

1. Nutrient content of diets for moderate malnutrition

- Nutrient intakes must be sufficient to allow wasted children to make lean tissue (e.g. muscle) and stunted children to increase height and lean tissue. There is evidence that, with high-quality diets, catch-up height can occur in children older than 2 years and even in adolescents. But there is no evidence that other stunting-related deficits, such as cognitive deficits, can be corrected.
- Diets should have a nutrient density equivalent to F100, a low anti-nutrient content and provide enough energy to support the desired rate of weight gain.
- Wasted and stunted children will make excess fat if their diets provide too much energy but not enough of the nutrients needed to make lean tissue.
- For stunted non-wasted children height gain should be associated with just enough weight gain to maintain a healthy weight-for-height
- Diets should provide:
 - about 12-15% of energy from proteins. Higher protein intakes increase renal solute load and may decrease appetite.
 - at least 30% of energy from fat.

Nutrient needs of moderately malnourished HIV+ children compared with moderately malnourished HIV- children

- The energy needs are higher by 20-30%.
- Percentage of energy from protein is the same.
- Micronutrient intakes are the same.
- Vitamin A supplementation and zinc supplements for children with diarrhoea are the same.

2. Diets for moderate malnutrition

Diets should:

- Include animal-source foods (e.g. meat, fish, milks, eggs).
- Be low in anti-nutrients (e.g. phytates) and fibre. Blended flours prepared with dehulled legumes are preferable to those with whole legume flour.
- Be low in salt.

Home-based processing such as fermentation, malting and soaking can improve nutrient availability and reduce the effects of anti-nutrients. Children fed diets with a high solute load (e.g. some high-energy diets) need to drink extra water. Breastmilk has a low solute load and should be given in preference to water when possible. Iron content of fortified foods should be at a level to prevent iron deficiency.



Figure 1. A malnourished toddler is given nutrient-rich Plumpy'Nut at Touching Tiny Lives, a non-profit organisation serving vulnerable children in Mokhotlong, Lesotho. (Credit: Touching Tiny Lives, Mokhotlong).

3. Food supplements for moderate malnutrition

Most feeding programmes for moderately malnourished children supply fortified blended foods (and oil and sugar). However diets based on blended foods may:

- Be high in anti-nutrients, particularly phytates.
- Provide no milk, which is important for growth.
- Contain too few micronutrients (even if fortified).
- Have a high bulk and viscosity (which limit intake).

There are plans by various agencies to:

- Increase the energy density and change the proportion of energy from fat.
- Add milk products.
- Dehull soybeans.
- Improve the fatty acid and micronutrient contents.

4. Dietary counselling for moderate malnutrition

- Relevant practical counselling can be effective in preventing and managing moderate malnutrition. However carers of moderately malnourished children usually receive the same dietary advice as carers of healthy children.
- Caregivers of moderately malnourished children need a reinforced approach that includes demonstrations, home visits and/or group meetings – advice should specifically reinforce the *quantity* of foods needed and promote age-appropriate friendly feeding practices.
- Infections and poverty are closely linked to moderate malnutrition so dietary counselling should be integrated with primary health care and community development programmes.

References

1. Proceedings of the WHO/UNICEF/United Nations High Commissioner for Refugees Consultation on the Management of Moderate Malnutrition in children under 5 years of age.¹
In Food and Nutrition Bulletin 30:3 pS464-474. 2009.
2. WHO Child Growth Standards
<http://www.who.int/childgrowth/standards/en>

Answers to the Clinical Quiz in SSMJ Vol 3, issue 1. February 2010

Case history: This picture shows a twelve-day old girl who was born by Caesarean section to a healthy mother at Kajo Keji Hospital. The mother was primagravida. She had no history of recreational drug use and was not on any regular prescription drugs including corticosteroids. The indication for her delivery by emergency caesarean section was failure of progress and foetal distress. The baby was delivered in healthy condition, but on the following day she had developed what appeared to be 'itching' as noted from her moving her arms over her breasts frequently. Mother was normotensive, had no vaginal discharge and her HIV status was negative.



Question 1. How many abnormalities can you identify in the above picture?

Answer. Three abnormalities:

- Bilateral gynaecomastia
- Left breast mastitis
- Pustular skin lesions anterior left shoulder, anterior right upper arm and left side of face.

Question 2. What investigations would you carry out?

Answer. Full blood count, C-reactive protein, syphilis serology, HIV test even if her mother's test was negative, pus swab from pustular lesions for gram staining, culture and sensitivities to isolate the offending organism and guide choice of appropriate antibiotics.

Question 3. What treatment would you start whilst waiting for results of tests?

Answer. A broad-spectrum antibiotic such as Ampicillin.

The bilateral breast enlargement is most likely due to maternal oestrogenic stimulation of the infant's mammary glands. It is likely to resolve over the next three to six months without intervention. Some of the tests listed above may not be available in Kajo Keji Hospital. The listed tests are the minimum the clinician should carry out if there was a well-equipped laboratory.

Quiz contributed by Dr Kandyang Modi Dumo Jansuk, Medical Officer in Obstetrics and Gynaecology, Juba Teaching Hospital. Answers from Dr Eluzai Hakim, Editor.

News from Southern Sudan

Profiles of health-related organisations working in Southern Sudan

The Southern Sudan Medical Journal is planning to publish the profiles of Non Governmental Organisations (both international and local) and other organisations working in health related fields in Southern Sudan. We hope this will help to publicise the valuable work these are doing, and allow people to make closer links with each other. In this issue we are pleased to present the profiles of the **Malaria Consortium** and the **Population Services International Sudan**. Each has responded to questions we sent. If you would like us to publish a similar profile of your organisation in a future issue of the Journal, please send it to Dr Eluzai Hakim (eluzai_hakim@yahoo.co.uk) or Dr Wani Mena (wanimena@gmail.com).

Malaria Consortium

What is the Malaria Consortium? The Malaria Consortium is a global leader dedicated to malaria and communicable disease control. It aims to improve the delivery of prevention and treatment to combat malaria and other communicable diseases in Africa and Asia, frequently working with civil society to achieve this goal.

How long has the Consortium been active in S Sudan? Since 2006.

Where do you work? The Consortium has four offices; Juba is the regional office with three field offices in Aweil, Malakal and Bentiu.

How many staff do you have? In Southern Sudan, the consortium has approximately 50 staff members both national and international; 25 these work in the Juba office.

What are your main health-related activities? Support for health systems strengthening systems and direct implementation for communicable disease control services such as malaria case management and treatment, child survival programmes, Long Lasting Insecticide treated Nets (LLIN) distributions and mapping of neglected tropical diseases and drug administration.

What are your main achievements to date? The Malaria Consortium has supported the Ministry of Health with the development of the malaria control strategic plan, as well as providing technical assistance and guidelines for malaria in pregnancy, surveillance systems and global fund proposal development. Malaria Consortium has also supported State Ministries of Health with health systems strengthening programmes and is currently implementing a national integrated neglected tropical disease control programme.

What are your main constraints and challenges? The working environment within Southern Sudan is challenging on a day to day basis. Factors such as the rainy season brings obstacles to field work such as the difficulty to get out into the villages; high turn over of staff and the ongoing political instability of the region all remain constraints and challenges.

What is your vision for the future? The Malaria Consortium's vision for the future is to reduce the burden of malaria and to improve access to treatment for all as well as eliminate neglected tropical diseases in southern Sudan.

What message would you like to give to readers of Southern Sudan Medical Journal? Within the southern Sudan context, working to strengthen the health system is challenging but has substantial potential and Malaria Consortium looks forward to continuing its work with the Ministry of Health and partners to contribute to this.

How can readers get more information on the Consortium? For more information about the Malaria Consortium please see the Malaria Consortium website www.malariaconsortium.org.

Thanks to Gemma Bruley for sending this information.

Population Services International (PSI) Sudan

What is PSI and how long have you been working in South Sudan? PSI is a non-profit organisation, based in Washington DC, USA committed to addressing health problems of low-income and vulnerable populations in more than 60 developing countries world-wide. PSI Sudan began operations in Southern Sudan in 2005.

Where in South Sudan do you work and how many staff do you have? PSI Sudan has offices in Juba, Yei and Wau with supported activities in 8 states. There are approximately 120 full time staff members. During the mass Long Lasting Insecticide treated Nets (LLIN) distribution in 2009 and 2010, PSI Sudan worked with over 20,000 volunteers.

What are your main health-related activities? Programmes conducted by PSI Sudan focus on three health areas: malaria, HIV and diarrhoeal diseases. Interventions include behaviour change communications campaigns, social marketing of products, capacity development of Community Based Organisations, and health systems strengthening starting at the village level with Community Based Distributors and working up through the health system framework to the national level.



A woman holding her voucher that entitles her to LLINs for her household as she waits at the distribution site (Credit: Jenn Warren ©PSI).

What are your main achievements to date? In collaboration with international and local partners, the PSI Sudan Malaria Department has distributed over 3.6 million Long Lasting Insecticide Treated Mosquito Nets in 8 states (see photo), as well as developed a network of community based distributors of Artemisinin-based Combination Therapy (ACTs) for children under the age of 5. Using private sector techniques to socially market health commodities, PSI Sudan has distributed 4,297,104 Number One condoms as well as 21,803,250 WaterGuard tablets and 539,220 PUR Sachets that together provide 441,457,200 litres of safe drinking water since the beginning of the programme in Southern Sudan in 2005.

With which departments, agencies and NGOs do you work? PSI Sudan is proud to include the following agencies

as partners: Ministry of Health, Ministry of Water Resources & Irrigation, Southern Sudan AIDS Commission (SSAC), SPLA HIV/AIDS Secretariat, UNICEF, UNDP, Sudanese Red Crescent Society, and many other non-governmental organisations and community-based organisations.

How can readers get more information about PSI? By visiting our website at <http://www.psi.org/sudan>

Thanks to Jane Czerwinski for sending this information.

Malnutrition in Akobo County

Extract from Nutrition Survey Report: Bilkey and Nyandit Payams, Akobo County, Jonglei State by Medair and Save the Children. February 2010

A nutrition survey of young children was carried out by Medair (see <http://www.medair.org>) and Save the Children in Southern Sudan (SCiSS) (see <http://savethechildren.org.uk>) in February 2010 (the mid-dry season) in Bilkey and Nyandit Payams, Akobo County. This was in response to a previous evaluation of the nutrition situation in Akobo town in January 2010. This had found that lack of rain had led to a high level of food insecurity, and increasing levels of malnutrition. The objectives of the survey were:

- To quantify the nutritional status of young children
- To determine the underlying causes of malnutrition
- To estimate the retrospective crude and under 5 mortality rates
- To estimate the coverage of measles vaccination
- To collect baseline information needed to make informed recommendations for future programming and possible interventions in the area.

Anthropometric data were analysed for 840 children aged 6 – 59 months (30 clusters of 28 children). Mortality data was based on a sample of 2562. 10 focus groups were held.

Results

There were high rates of acute malnutrition (Global Acute Malnutrition = 45.7% using weight-for-height z score and 27% using mid-arm-circumference); crude mortality rate (total deaths/10,000 people/day) was 0.43 and under 5 mortality rate (deaths of under-5 year olds/10,000 under five year old children/day) was 1.19. Child health indicators were poor, with a high percentage of morbidity (particularly diarrhoea) combined with low measles and vitamin A coverage.

The rates of global acute malnutrition are above the WHO crisis level but death rates are below WHO emergency levels. Reasons for this finding may be that the feeding programme started in 2009 was enough to prevent some deaths, or that the more vulnerable died during the tribal attacks of 2009.

Recommendations

The nutrition programme at Akobo hospital is filled beyond capacity and the food security outlook is poor. Therefore it is recommended that:

- There are general food distributions to the entire population until the next crops are

harvested – and close monitoring to ensure that a full ration is received by the intended beneficiaries and that the vulnerable receive their share.

- Supplemental feeding programme is restarted. The programme should be accessible to the population, which live outside Akobo town and should be available to families that may return to Nyandit.

Thanks to SCiSS and Medair for allowing us to publish this summary.

Reports and Resources

This section gives relevant clinical information from other journals and reports, and suggests materials that can be freely downloaded, and/or obtained in hard copy or on CD. Items are grouped under: Chronic diseases; HIV and other infections; Paediatrics/child health; Surgery; General resources.

Please look out for other publications to include in this section. Send them to Dr Wani Mena wanimena@gmail.com or Dr Eluzai Hakim eluzai_hakim@yahoo.co.uk.

Chronic diseases

Neglected cardiovascular diseases in Africa: Challenges and opportunities

Several medical conditions that affect the cardiovascular system are unique to Africans, but structured control programs have not been systematically researched. Among the causes of the emergence of CVD burden in Africa are rapid urbanisation, lack of physical activity, increasing obesity and hypertension, high-salt intake and diets high in cholesterol, smoking tobacco, and increasing diabetes, combined with increasing life-expectancy. Despite the huge disease burden on the continent, the epidemiology of diseases such as rheumatic valve disease, cardiomyopathies, and tuberculous pericarditis has been neglected; natural histories of the diseases are often incompletely described, and aetiology and pathogenesis of the diseases also remain unclear. This has led to stagnation in medical care for patients, and absence of effective preventive measures.

Multidisciplinary strategies should be used to increase research aimed at improving knowledge of epidemiology, mechanisms, and management of neglected cardiovascular diseases including:

- Building research capacity in health sciences in Africa through North-South collaboration projects led by local investigators.
- Designing projects that involve collaboration between African institutions.

- Prioritising research into these molecular mechanisms of cardiovascular diseases that are unique to Africa.
- Evolving innovative management strategies tailored to the African setting.
- Understanding the scientific and lay aspects of traditional medicine that might have implications in the health status of the communities.

See *Neglected cardiovascular diseases in Africa: Challenges and opportunities* A Mocumbi, M Ferreira. *J Am Coll Cardiol*, 2010; 55:680-687 (open access)

<http://content.onlinejacc.org/cgi/content/full/55/7/680>

Heavy drinking increases cardiovascular disease risk for men with HIV.

US investigators report that "Hazardous drinking (more than 14 alcoholic drinks/week), and alcohol abuse or dependence were significantly associated with an increased prevalence of cardiovascular disease as compared with infrequent or moderate drinkers. The effect of alcohol may be more pronounced among those infected with HIV".

The association was still present when they took into account traditional risk factors for such illnesses and the patients' HIV-related characteristics. It is possible that alcohol is related to a number of health problems in people with HIV - including poor adherence to antiretroviral treatment and liver disease.

For both HIV-positive and HIV-negative men, traditional risk factors such as age, cholesterol, high blood pressure, and smoking were also significantly associated with an elevation in the risk of cardiovascular disease

Freiberg MS. The association between alcohol consumption and prevalent cardiovascular diseases among HIV-infected and HIV-uninfected men. J Acquir Immune Defic Syndr (online edition), 2009.

Diabetes takes disproportionate toll in Africa

According to data from researchers in 5 African countries who interviewed 4,600 men and women, half of whom were diabetic:

- Africans with diabetes have triple the rates of heart disease, stroke, kidney disease, and heart failure than their counterparts in other countries, and
- More tuberculosis, HIV/AIDS, and malaria.

More than half reported they could not buy all the medicines they needed, and 20% were not able to buy food because of their medical expenses. Preliminary results also indicated that 15% of family members had to quit work to care for a relative with diabetes and 15% had to work more to assist with the cost of care.

See "People in developing countries pay more for diabetes care and have poorer health results" *Diabetes Voice* December

2009; 54(3):12.

http://www.diabetesvoice.org/files/attachments/2009_3_Final.pdf

Overweight and obesity in urban Africa: A problem of the rich or the poor?

There is now a real threat that it will not be long before obesity among urban women reaches epidemic proportions in African countries.

Analysis of data from 7 sub-Saharan African countries confirmed that women of higher socio-economic levels were more likely to be overweight or obese than their poorer counterparts. Similarly, women engaged in income-generating activities were more likely to be overweight. However the speed of increase in obesity was found to be higher among the poorest group as compared to the richest group. This is probably because of changing nutritional and lifestyle trends - people living in urban areas are eating more refined and energy-dense foods and have very little physical activity.

In most African cultures, big is considered beautiful and a sign of wealth. Other factors associated with a higher risk of obesity include genetic predisposition, metabolic disorders, gender, and environmental factors.

While poverty and social exclusion are likely to increase the risks of developing a chronic disease, the poor are also more likely to develop and die of its complications due to their inability to afford treatment and care.

See: *Overweight and obesity in urban Africa: A problem of the rich or the poor?* AK Ziraba, JC Fotsos, R Ochako. *BMC Public Health* 2009.

<http://www.biomedcentral.com/content/pdf/1471-2458-9-465.pdf>

Twenty percent of adolescents use smokeless tobacco in Republic of Congo

18% of 3,034 in-school adolescents reported using smokeless tobacco (chewing tobacco, snuff or dip) within the past month, with rates for females and males the same. Students who smoked cigarettes were 9 times more likely to also use smokeless tobacco.

[Have you information on the use of sawuut in Southern Sudan?]

See "Current use of smokeless tobacco among adolescents in the Republic of Congo" *BMC Public Health* 2010, 10:16 (open access)

<http://www.biomedcentral.com/content/pdf/1471-2458-10-16.pdf>

Public Health 2009, 9:465 doi:10.1186/1471-2458-9-465, <http://www.biomedcentral.com/content/pdf/1471-2458-9-465.pdf>

Meta-analysis of studies on salt, stroke, and CVD

The results of this meta-analysis demonstrate a strong and biologically plausible association between a high intake of salt and an increased risk of stroke and other CVD related outcomes in adult men and women. It reinforces the importance of salt in the development of stroke, one of the leading causes of morbidity, functional disability, and mortality throughout the world. Given the excessive presence of sodium in the diets of most developing countries, especially in prepared foods, efforts are needed to work with food companies and food distributors to reduce the amount of sodium contained in many food products. See *Salt intake, stroke, and cardiovascular disease: Meta-analysis of prospective studies* by P Strazzullo, L D'Elia, NB Kandala and FP Cappuccio. *BMJ* 2009; 339:b4567 http://www.bmj.com/cgi/content/abstract/339/nov24_1/b4567

New data suggest that reduction in individual dietary salt intake of 3 grams per day would have approximately the same effect on rates of coronary heart disease events as:

- a 50% reduction in tobacco use
- a 5% reduction in body-mass index among obese adults or
- the use of statins to treat persons at low or intermediate risk for CHD events.

See: *Projected effect of dietary salt reductions on future cardiovascular disease* by K Bibbins-Domingo et al. *N Eng J Med*. 20 January 2010. <http://content.nejm.org/cgi/content/full/NEJMoa0907355v1>

Stroke website at <http://www.cdc.gov/stroke/>

This is a new website launched by the US Centers for Disease Control and Prevention. It gives free downloadable educational materials for public health and health care professionals and patients, and compilation of journal articles and well-illustrated guidelines/recommendations.

Arbor Clinical Nutrition Update #319: Stroke prevention and nutrition

This looks at the role of nutrition in the prevention of stroke and considers a wide range of nutrients, such as antioxidants, fat, salt and other minerals, as well as dietary patterns like the Mediterranean diet.

The Arbor Clinical Nutrition Updates is an electronic publication, describing and commenting on current nutrition research and topics and is a free service to health professionals and students. The Updates are distributed by email or can be downloaded. To receive the Updates subscribe at:

www.nutritionupdates.org/sub/sub01.php?item=2. Or send email to upD@arborcom.com giving: your name, email address, the country where you live and your profession.

HIV and other infections

Daily co-trimoxazole prophylaxis in severely immunosuppressed HIV-infected adults in Africa started on combination antiretroviral therapy: an observational analysis of the DART cohort.

The results reinforce WHO guidelines and provide strong motivation for provision of co-trimoxazole prophylaxis for at least 72 weeks for all adults starting combination ART in Africa.

AS Walker, D Ford, CF Gilks, P Munderi, F Sali, A Reid, E Katabira, H Grosskurth, P Mugenyi, J Hakim, JH Darbysbire, DM Gibb, AG Babiker. The Lancet, Volume 375, Issue 9722, Pages 1278 - 1286, 10 April 2010.

Note: Professor James Hakim is on the Editorial Team of this journal

Diagnosis and management of antiretroviral-therapy failure in sub-Saharan Africa: challenges and perspectives

Despite the enormous progress made in scaling up antiretroviral therapy (ART) in sub-Saharan Africa, many challenges remain, not least of which are the identification and management of patients who have failed first-line therapy. Less than 3% of patients are receiving second-line treatment at present, whereas 15—25% of patients have detectable viral loads 12 months or more into treatment, of whom a substantial proportion might have virological failure. This paper discusses the reasons why virological ART failure is likely to be under-diagnosed in the routine health system, and the current difficulties with standard recommended second-line ART regimens. The development of new diagnostic tools for ART failure, in particular a point-of-care HIV viral-load test, combined with simple and inexpensive second-line therapy, such as boosted protease-inhibitor monotherapy, could revolutionise the management of ART failure in resource-limited settings.

See *Lancet Infectious Diseases, vol 10 issue 1 p60-65 January 2010*

Integrating TB and HIV services: lessons from the field

This edition of **HIV & AIDS Treatment in Practice (HATIP) #156** looks at recent research on how HIV care is delivered in TB services, and considers the need for closer integration of TB and HIV services. The HATIP newsletter examines examples of successful integration, with a particular focus on the practical organisation of services and

workforce to achieve higher rates of diagnosis, TB cure and retention in long-term HIV care.

For further information see <http://www.aidsmap.com/hatip> and <http://www.aidsmap.com/cms1397718.asp>

Recent WHO recommendations are that all HIV-infected people diagnosed with TB should receive antiretroviral therapy, and that it should begin while patients are still receiving TB treatment (see

http://www.who.int/tb/challenges/hiv/factsheet_hivtb_2009update.pdf

HIV and AIDS Treatment and Practice (HATIP) is a regular free electronic newsletter for health care workers and community-based organisations on HIV treatment in resource-limited settings. See <http://www.aidsmap.com/hatip>

The World Malaria report 2009

This found that increased international funding has resulted in a dramatic scale up of malaria control interventions in several countries and measurable reductions in malaria burden. The report noted that:

- More African households (31%) own at least one insecticide-treated net (ITN), and more children under 5 years of age used an ITN in 2008 (24%) compared to previous years.
- Use of artemisinin-based combination therapies (ACTs) is increasing but remains low in most African countries with fewer than 15% of children with fever receiving an ACT.
- More than one-third of the 108 malarious countries documented reductions in malaria cases of more than 50% in 2008 compared to 2000.
- Where scale-up of proven interventions has occurred, and surveillance systems are functioning, remarkable impact has been documented.

Parasite resistance to anti-malarial medicines and mosquito resistance to insecticides are major threats to achieving global malaria control. Key elements to prevent the spread of drug resistance include:

- Rapidly reducing the spread of malaria using malaria preventive tools.
- Ensuring that all malaria infections are correctly diagnosed, effectively treated and followed-up.
- Stopping the marketing and use of oral artemisinin monotherapies.
- Carefully monitoring the efficacy of medicines to detect early evidence of resistance.

The World Malaria Report 2009 at

http://www.who.int/malaria/world_malaria_report_2009/en/index.html

WHO Guidelines for the treatment of malaria 2nd edition, 2010.

The Guidelines aim to provide simple and straightforward treatment recommendations based on sound evidence that can be used in severely resource-constrained settings. Order from WHO at bookorders@who.int Number 11502662 Price Swiss francs 14.00 for developing countries 194 pages, See details at <http://apps.who.int/bookorders/anglais/detart1.jsp?sesslan=1&codlan=1&codcol=15&codcch=2662>

International Union against Tuberculosis and Lung Disease

The mission of the Union is to address health challenges in low- and middle-income populations. With nearly 10,000 members and subscribers from 145 countries, The Union has its headquarters in Paris and regional and country offices serving the Africa and other regions. Its scientific departments focus on **tuberculosis, HIV, lung health and non-communication diseases, tobacco control and research**. The Union has developed programmes for TB-HIV, asthma, and pneumonia in children under five years of age, and tobacco control. The emphasis is on providing health solutions for the poor.

For more information and useful links to publications and related organisations see <http://www.theunion.org>.

For example see **Technology, Research, Education and Technical Assistance for Tuberculosis (TREAT TB)** at www.treattb.org.

Paediatrics/Child Health

Fourth Edition of 'Facts for Life'

This well known handbook provides vital messages and information for mothers, fathers, other family members and caregivers and communities to use in changing behaviours and practices that can save and protect the lives of children and help them grow and develop to their full potential.

This new version builds on the three previous editions, *Newborn Health* has been added to the *Safe Motherhood* chapter and a new chapter, *Child Protection*, has been included.

Facts for Life is written in easy-to-understand language. Users are encouraged to find new ways to use its messages and so help families and communities to realise the rights of children and women everywhere.

Download **Facts for Life** (in Word or pdf) from <http://factsforlife.org> or buy the hard copy through <http://factsforlife.org/00/text.html> (price US\$15). The website also gives background documents and video clips.

The 4th edition of Facts for Life was published by UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP and the World Bank in April 2010.

Nutrition in Emergencies Regional Training Initiative

The new website of this Training Initiative is online at: <http://www.nietraining.net> and gives information about new courses in emergency nutrition. The intensive 6- and 12-day courses aim to equip participants with the expertise needed to lead or support nutrition responses. They are intended to build the skills of anyone who has an involvement with emergency nutrition, including health and food security staff, and general programme managers. The next course for the Africa Region will be in January 2011 at Makerere University School of Public Health. Visit the website for more information.

Revised WHO recommendations on HIV and infant feeding

Recent studies have found that antiretroviral (ARV) treatment provided to either the HIV-infected mother or the HIV-exposed infant can substantially reduce the risk of post-natal transmission of HIV through breastfeeding. The revised WHO Guidelines on **Infant feeding in the context of HIV** give 8 key principles and 7 key recommendations were developed for these guidelines.

The key principle is that infant feeding practices by HIV-infected mothers should support the greatest likelihood of HIV-free survival of their children and not harm the health of mothers. This principle is meant to balance the risk of infants acquiring HIV through breast milk with the higher risk of dying from other causes, such as diarrhoea and lower respiratory tract infections, due to the bigger risk of these non-HIV related diseases among infants who are not breastfed.

The 7 key recommendations are summarised, as follows:

1. HIV-infected mothers should be provided with lifelong ART's or antiretroviral prophylaxis interventions to reduce HIV transmission through breast milk. The mother should receive:
 - AZT during pregnancy, and the infant should receive daily Nevirapine from birth until the cessation of breastfeeding *or*
 - A 3-drug regimen during pregnancy, and this maternal regimen should be continued until the cessation of breastfeeding.
2. HIV-infected mothers whose infants are uninfected (or of unknown HIV status) should exclusively breastfeed for the first 6 months. After this appropriate complementary foods should be introduced. Breastfeeding should continue through 12 months of life, and should

be stopped only after nutritionally adequate and safe dietary alternatives can be provided.

3. Abruptly stopping breastfeeding is not advised. HIV-infected mothers who decide to stop breastfeeding should gradually stop over approximately one month. If the mother or child has been taking prophylaxis medications, this treatment should continue for at least one week after stopping breastfeeding.
4. Infants of HIV-infected mothers who stop breastfeeding should be provided with safe and adequate replacement feeds.
5. HIV-infected mothers with uninfected infants (or infants with unknown HIV status) should only give commercial infant formula milk as a breast milk replacement if the milk replacement is: affordable, feasible, acceptable, sustainable, and safe (AFASS).
6. HIV-infected mothers should consider expressing and heat-treating breastmilk as an interim strategy in special circumstances. For example, to help with stopping breastfeeding or if ART is temporarily unavailable.
7. HIV-infected children should be exclusively breastfed for the first 6-months of life, and continue breastfeeding up to 2-years or beyond.

See Rapid advice: use of antiretroviral drugs for treating pregnant women and preventing HIV infection in infants. November 2009. Download at <http://www.who.int/hiv/pub/mtct/advice/en/index.html> and **Rapid advice: revised WHO principles and recommendations on infant feeding in the context of HIV.** November 2009. Download at http://www.who.int/child_adolescent_health/documents/9789241598873/en/index.html and <http://www.who.int/hiv/topics/mtct/>.

World Health Organisation's strategic vision for preventing mother-to-child transmission of HIV

The report makes special mention of the major role which community health workers can play in this area. It says, "...community health workers play an important role in increasing the uptake of PMTCT services by providing information on access to services, expanding treatment literacy related to the use of ARVs, supporting treatment preparedness and adherence, and encouraging positive prevention and disclosure of HIV status".

http://www.who.int/hiv/pub/mtct/strategic_vision/en/index.html

Management of severe pneumonia in Malawi

Standard case management of pneumonia can reduce overall child mortality, provided it is delivered effectively. The government of Malawi has introduced a national programme for the

delivery of standard case management for pneumonia in children. This article describes the development, scale-up, and achievements of this programme, which is based on a successful anti-tuberculosis service delivery model, and discusses the challenges facing the implementation of this adapted service delivery model.

See Development and Implementation of a National Programme for the Management of Severe and Very Severe Pneumonia in Children in Malawi. P. Enarson, R. Gie, D. Enarson, C. Mwansambo. *Health in Action*, published 10 Nov 2009. *PLoS Medicine*.

doi:10.1371/journal.pmed.1000137 at

<http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000137>

Diarrhoea: Why children are still dying and what can be done A report and website from WHO and UNICEF at <http://7pointplan.org>

Nearly one in five child deaths - about 1.5 million each year - is due to diarrhoea. It kills more young children than AIDS, malaria and measles combined. Today, only 39 per cent of children with diarrhoea in developing countries receive the recommended treatment. This user-friendly report and website examines the latest available information on the distribution of childhood diarrhoea and sets out a 7-point plan that includes:

Treatment package

1. Fluid replacement to prevent dehydration.
2. Zinc treatment.

Oral rehydration therapy is the cornerstone of fluid replacement. New elements of this approach include low-osmolarity ORS, which are more effective at replacing fluids than the previous ORS formulation, and zinc treatment, which decreases diarrhoea severity and duration. Important additional components of the package are continued feeding, including breastfeeding, during the diarrhoea episode and use of appropriate fluids available in the home if ORS is not available.

Prevention package

3. Rotavirus and measles vaccinations.
4. Promotion of early and exclusive breastfeeding and vitamin A supplementation.
5. Promotion of handwashing with soap.
6. Improved water supply quantity and quality, including treatment and safe storage of household water.
7. Community-wide sanitation promotion.

New aspects of this approach include rotavirus vaccination and new more-effective approaches to stop open defecation.

See also: Diarrhoea: why children are still dying and what can be done Wardlaw T, Salama P, Brocklehurst C, Chopra M & Mason E. *The Lancet, Early Online Publication*, 14 Oct2009

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)61798-0/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61798-0/fulltext)

Diarrhoea in children with HIV: 8-page clinical review

This review by Theo Smart looks at the management of diarrhoea in children with HIV. It covers:

- Causes of diarrhoea
- Types of diarrhoea, and how to assess and classify diarrhoea in children
- Management of dehydration
- Treatments for diarrhoea
- Approaches to prevention

See HIV and AIDS Treatment and Practice (HATIP) #157 (15 April 2010)

www.aidsmap.com/cms1405890.asp

Surgery

Surgery in Africa Monthly Reviews

These reviews are available free at www.ptolemy.ca/members

Examples of recent ones are:

- December 2009 Review, "**Injuries to the Diaphragm**"
- February 2010 "**Acute Septic Arthritis and Osteomyelitis in Children - An African Perspective**"
- April 2010 "**Cryptorchidism - a comprehensive clinical review**".

Also at this site are archives of reviews since 2005 and a resource library.

General resources

Africa Health Journal

This journal is now available on an open access basis at a **new website** -see <http://www.africa-health.com>. For over 30 years **Africa Health** has been a leading source of clinical and managerial information for health professionals from across Africa (see example of the contents of the March 2010 issue below). Available at the same site are the peer-reviewed sister journals, the **African Journal of Diabetes Medicine** and the **African Journal of Respiratory Medicine**.

Example of contents of March 2010 issue of Africa Health:

- **Malaria:** Magic bullets and damp squibs: current state of drug resistance
- **TB:** Improving patient follow-up in a large urban setting: a case study from Kampala
- **Family Health:** Integrating family planning and HIV services. Research from Africa is leading way
- **Pneumonia:** review diagnosis, aetiology and severity in adult community acquired pneumonia. A practical guide for health workers"

Reference Books from Doctors Without Borders/Médecins Sans Frontières (MSF)

The following recent books are available to download in pdf format from

<http://www.refbooks.msf.org>;

- Essential Drugs – 2010
- Clinical guidelines – 2010
- Management of epidemic meningococcal meningitis – 2008
- Obstetrics in remote settings – 2007
- Tuberculosis – 2010

Note that to download and distribute these books you need permission from MSF International Technical Coordination itc@msf.org

You can buy the books from Teaching-aids At Low Cost (TALC) – see

www.talcuk.org/featured-publishers/msf.htm

Where there is no doctor – download, or buy the CD or book.

You can download free high- and low-resolution pdfs of **Where There is No Doctor** at www.hesperian.org/publications/download_wtnd.php. The CD-ROM costs US\$16.00 and the book is US\$22.00. See more details at www.hesperian.org/index.php under 'Publications and Bookstore'.

The Global Health eLearning Center (USAID)

Four new courses have been published:

- Human Resources for Health Basics
- Newborn Sepsis
- Community-Based Family Planning
- FP/RH for People Living with HIV

See www.globalhealthlearning.org to take these new courses or any of the 33 courses available on the site.

Selected Health Information Resources for Africa at www.netvibes.com/phijean

This site lists selected English-language health information resources which those running a resource centre in Africa might find useful. It gives links to sources of relevant books, websites and other online lists of materials. Some of the resources are free of charge to low-income countries only; others are free of charge to everyone; and, for a few, payment may be necessary by subscription or at the point of use unless the institution or consortium of libraries has obtained access rights.

This site has been created by Partnerships in Health Information

<http://www.partnershipsinhealthinformation.org.uk>

Every effort has been made to ensure that the information and the drug names and doses quoted in this Journal are correct. However readers are advised to check information and doses before making prescriptions. Unless otherwise stated the doses quoted are for adults.

WHO charts for everyone caring for children in hospital

In this issue of the Journal we are reproducing on pages 42-43 the second chart from **'Pocket Book of Hospital Care for Children - Guidelines for the Management of Common Illnesses with Limited Resources'** (WHO 2005). This is **'Chart 2. Triage of all sick children'** [page 4-5].

We plan to publish more charts from this book in future issues. We hope you will find them useful.

You can use these charts in different ways. For example, you can print them and display them in relevant wards or clinics (laminated if possible), use them as a 'memory aid' in your pocket or use them as handouts or visual aids when training staff. Please let us know if you find the charts useful and how you use them.

You can download the whole book from <http://www.ichrc.org/>.

We thank the WHO for permission to reproduce these charts, and Dr O'Hare who gave us the idea of making the charts more widely available.

CHART 2. Triage of all sick children

EMERGENCY SIGNS

If any sign positive: give treatment(s), call for help, draw blood for emergency laboratory investigations (glucose, malaria smear, Hb)

ASSESS

Airway and breathing

- Obstructed breathing,
or
- Central cyanosis,
or
- Severe respiratory distress

ANY SIGN
POSITIVE

Circulation

Cold hands with:

- Capillary refill longer than 3 seconds,
and
- Weak and fast pulse

ANY SIGN
POSITIVE

*Check for
severe
malnutrition*

TREAT

Do not move neck if cervical spine injury possible

If foreign body aspiration

- Manage airway in choking child (Chart 3)

If no foreign body aspiration

- Manage airway (Chart 4)
- Give oxygen (Chart 5)
- Make sure child is warm

- Stop any bleeding
- Give oxygen (Chart 5)
- Make sure child is warm

If no severe malnutrition:

- Insert IV and begin giving fluids rapidly (Chart 7)
If not able to insert peripheral IV, insert an intraosseous or external jugular line (see pages 310, 312)

If severe malnutrition:

If lethargic or unconscious:

- Give IV glucose (Chart 10)
- Insert IV line and give fluids (Chart 8)

If not lethargic or

unconscious:

- Give glucose orally or by NG tube
- Proceed immediately to full assessment and treatment

CHART 2. Triage of all sick children (*continued*)

EMERGENCY SIGNS

If any sign positive: give treatment(s), call for help, draw blood for emergency laboratory investigations (glucose, malaria smear, Hb)

ASSESS

Coma/convulsing

- Coma
or
- Convulsing (now)

**IF COMA OR
CONVULSING**

TREAT

Do not move neck if cervical spine injury possible

- Manage airway (Chart 3)
- If convulsing, give diazepam or paraldehyde rectally (Chart 9)
- Position the unconscious child (if head or neck trauma is suspected, stabilize the neck first) (Chart 6)
- Give IV glucose (Chart 10)

Severe dehydration

(only in child with diarrhoea)

Diarrhoea plus any two of these:

- Lethargy
- Sunken eyes
- Very slow skin pinch

**DIARRHOEA
plus**

**TWO SIGNS
POSITIVE**
*Check for
severe
malnutrition*

- Make sure child is warm.

If no severe malnutrition:

- Insert IV line and begin giving fluids rapidly following Chart 11 and Diarrhoea Treatment Plan C in hospital (Chart 13, page 114)

If severe malnutrition:

- Do **not** insert IV
- Proceed immediately to full assessment and treatment (see section 1.3, page 18)

PRIORITY SIGNS

These children need prompt assessment and treatment

- Tiny baby (<2 months)
- Temperature very high
- Trauma or other urgent surgical condition
- Pallor (severe)
- Poisoning (history of)
- Pain (severe)
- Respiratory distress
- Restless, continuously irritable, or lethargic
- Referral (urgent)
- Malnutrition: visible severe wasting
- Oedema of both feet
- Burns (major)

Note: If a child has trauma or other surgical problems, get surgical help or follow surgical guidelines

NON-URGENT

Proceed with assessment and further treatment according to the child's priority