Editorial

The main objective of the Regional Health Forum is the exchange of information and ideas on any aspect of public health. It is thus a platform where health professionals at all levels can express their views, observations and experiences rather than a scientific journal (although we do, of course, fully encourage submission of health research).

We are currently examining possibilities to make the RHF more interesting and interactive. Such possibilities could include increasing the frequency of RHF issues (e.g. bringing it out every quarter); wider participation of and dialogue among readers, and devoting RHF issues to interesting and stimulating themes. Please, therefore, do not hesitate to send us your fresh ideas and contributions (addressed to editor@searo.who.int) in the form of articles or essays.

The next issue of the Forum will be devoted to the theme of World Health Day 2009 – Health facilities in emergencies.
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Communicable diseases

Establishment of International Organization for Standardization-accredited mobile diagnostic laboratory to enhance public health response against avian influenza


Abstract

Recognizing that the turnaround time for a permanent laboratory service to analyse specimens for influenza viruses, especially those responsible for avian influenza, using the reverse transcriptase-polymerase chain reaction (RT-PCR) was three days, an innovative rapid-response mobile laboratory service was developed in Thailand. The aim was to enhance the response to the potential pandemic of avian influenza. The turnaround time of the whole process that included sample delivery to the mobile unit; sample processing and analysis; and the result report was reduced to 6–8 hours. The inter-laboratory comparison of results obtained by the mobile laboratory and the Thailand National Institute of Health was satisfactory and acceptable, and was documented. The results of specimens collected from a total of 130 patients in Kalsin and Nakomphanom provinces showed absence of genetic materials of avian influenza H5N1 in all cases but detected influenza A/H1 in 25 cases (19.23%) and human influenza B in 9 (6.92%) cases. All requirements of the International Organization for Standardization (ISO) 15189:2003 were met. Formal recognition was then processed and the avian/human influenza mobile laboratory was accredited (ISO 15189) to meet the needs of patients and clinical personnel responsible for patient care. This study could be used as a public health strategy for global benefits.

Keywords: avian influenza, quality mobile laboratory, ISO 15189-accredited.

Introduction

The highly pathogenic avian influenza caused by certain subtypes of influenza A virus in animal populations, particularly chickens, poses a global public health risk. Direct human infection by an avian influenza A (H5N1) virus was recognized during the 1997 outbreak in China, Hong Kong Special Administrative Region. Subsequently, human infections with an avian strain of the H9 and H7 subtypes were documented. Outbreaks of avian influenza A (H5N1) in humans and the apparent endemicity of this subtype in poultry in South-East Asia have also been reported.

The laboratory identification of human influenza A virus infections is commonly carried out through direct antigen detection, isolation in cell culture or detection of influenza-specific RNA by RT-PCR. For laboratories that receive requests to test specimens from patients with an influenza-like illness (in cases of clinical or epidemiological evidence of influenza A viral infection), the World Health Organization (WHO) recommends that the ideal specimen for detection is the nasopharyngeal aspirate obtained within three days of the onset of symptoms.¹

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Conventionally, laboratories receiving patient specimens suspected to be infected with influenza have been performing PCR and submitting reports in three–four days. Hospitals in remote areas might take even more time to transport the samples to regional reference laboratories, thus resulting in an inefficient control of a serious epidemic. Therefore, the need for a more rapid diagnosis was increasingly being felt.

The Regional Medical Sciences Centre, Khon Kaen, Thailand, in cooperation with the National Institute of Health, established an innovative rapid-response mobile laboratory service to serve the community in epidemic areas in the upper northeastern region of Thailand. The quality system of the avian influenza mobile laboratory was monitored in compliance with ISO 15189 requirements.

Health technologies have recently been defined by the World Health Organization (WHO) as the application of knowledge and skills in the form of devices, medicines, vaccines, procedures and systems to solve health problems and thereby improve the quality of lives. WHO also advocates that researchers should use the latest advances in molecular and biological technology to develop simple, reliable and user-friendly kits that could be used in community settings.

The Regional Medical Sciences Centre, Khon Kaen, Thailand, has developed a model of a quality, rapid-response avian/human influenza mobile laboratory that is not as expensive as the conventional reference laboratory.

Methodology

The study design comprised three components:

Firstly, it was planned in 2006 that a mobile laboratory be set up with the objective of ensuring access to laboratory services for aetiological diagnosis of diarrhoeal diseases in remote communities in Thailand where the capacity to undertake bacteriological work was limited. A community mobile laboratory was thus launched in January 2006 to demonstrate its feasibility in Ajsamartampur, Roi Et province. Some requirements of ISO 15189 standards were met. The mobile laboratory successfully demonstrated that it could provide a “one-stop shop” comprehensive laboratory service similar to the one provided by any permanent laboratory. The community could receive official reports at the mobile site using the in-house sample information management programme. The mobile laboratory not only provided rapid-response service to the community but also trained and empowered laboratory personnel of the Ajsamart Community Hospital to perform the test by themselves.

Secondly, during the third and fourth waves of the highly pathogenic avian influenza poultry outbreak in Thailand, the Department of Medical Sciences’ mobile laboratory, which was well-equipped with influenza virus diagnosis instruments using RT-PCR techniques, was installed in Kanjanaburi, Nakornawan. The diagnostic strategies were adapted to meet the local needs and operational realities, and were thoroughly communicated to all agencies responsible for health care.

Thirdly, selective studies in notifiable cases of poultry outbreak were undertaken in the upper north-eastern provinces of Thailand. These studies were preceded by activities to ensure coordination with community leaders and health personnel in epidemic areas regarding setting up of laboratory surveillance networks. All national guidelines in respect of laboratory protocols were clearly communicated and pre-tested, including sample collection; analytical methodology; data interpretation; and prompt reporting of results to hospitals and responsible health managers.

Rapid field investigations were conducted in epidemic areas of Kalsin and Nakornphanom provinces from April to August.
2006. Well-trained medical technologists with good ISO 15189 knowledge were posted at the mobile laboratory. Nasal/nasopharyngeal swabs of patients suspected of carrying the avian influenza H5N1 virus were examined. The RNA extraction involving the patient’s viral transport media was conducted in the local laboratory. The Regional Medical Sciences Centre, Khon Kaen, used the Phase I (initial) model of the avian influenza mobile laboratory that did not include the pre-RT-PCR function. The pre-RT-PCR laboratory function was essential for separating the extracted RNA amplification (RT-PCR amplification) from the post-PCR laboratory function in order to avoid contamination.

The extracted RNA was amplified by the RT-PCR amplification methodology in the mobile laboratory using the thermal cycle equipment. The DNA products were analysed in the mobile laboratory using the agarose gel electrophoresis technique under ultraviolet (UV) light.

The rapid field methodology was pre-tested in the mobile laboratory at Kalsin. The inter-laboratory comparison of analytical results obtained by the mobile laboratory and the Thailand National Institute of Health was also implemented there. An examination of the specimen collected from a suspected male patient in Kalsin Hospital revealed the absence of genetic materials of avian influenza H5N1. A total of 129 specimens were collected from Nakornphanom: 65 males (50.39%) and 64 females (49.61%), of whom 61 were chicken-exposed cases (47.29%), while the remaining 68 (52.71%) had no history of exposure. These were analysed as per the national protocol.

The quality of laboratory practices of the mobile laboratory was verified in Nakornphanom. Furthermore, quality improvement efforts were sustained in compliance with ISO 15189 requirements. Requests for corrective action in respect of the quality systems being practised by the mobile laboratory were reviewed and implemented.

Results

The turnaround time involving the handling, transportation and receiving of the sample, keeping it in safe custody, processing it for diagnosis, and officially reporting the results at the mobile “one-stop” service was found to be between 6–8 hours. This meant a reduction in the operation time of about 90%, as compared to the permanent laboratory, the service turnaround time of which was three days.

The system established by the mobile laboratory, and how it was being managed technically in compliance with ISO 15189, was fully demonstrated by the study. The inter-laboratory comparison of the same sample of analytical results obtained by the mobile laboratory and the Thailand National Institute of Health was found to be satisfactory and acceptable, and was documented. The avian/human mobile laboratory was therefore accredited as an ISO 15189:2003 laboratory on 26 September 2006.

The results of specimens collected by the mobile laboratory from 130 patients in the Kalsin and Nakornphanom provinces were analysed. These revealed undetected genetic materials of influenza A/H5N1 in all cases; detected influenza A/H1 materials in 25 (19.23%) cases and human influenza B in 9 (6.92%) cases. These results were compared with results of specimens of 117 cases (65 males and 52 females) sent from hospitals in north-eastern provinces. The latter were analysed at the permanent laboratory in Khon Kaen during the endemic period: 16 May to 19 October 2006. Results of genetic material detected the absence of H5N1 in all cases, influenza A/H1 in 43 (36.75%) cases and influenza B in 5 (4.27%) cases. Overall, the 82 patients suspected of carrying the influenza virus also showed a significant degree of illness: cough; sore throat; throat sputum; nasal excretion; headache; nasal congestion; bronchitis and breathing difficulties; and diarrhoea.
Discussion and conclusion

The “one-stop” rapid response ISO 15189-accredited mobile laboratory helped the community in solving its disease control problems effectively, besides performing diagnostic activities that were comparable to those undertaken at the National Reference laboratory. The activities and quality control system established by the Reference Laboratory could be easily replicated by the mobile laboratory through adequate training of medical technologists. It is believed that this category of laboratories will help solve health problems in the South-East Asia Region by assisting WHO in implementing its global influenza readiness plan in the future.

The rapid-response health technologies have become a critical component of health systems in Thailand. These evidence-based, cost-effective and feasible front-line health technologies are proving to be indispensable tools for meeting priority needs to tackle the serious challenge of avian and human influenza being faced by patients in the community setting. The efficient application of the quality rapid-response mobile laboratory model has drawn attention of international health administrators. The mobile laboratory may become an important component of global healthcare services in the context of the serious emerging and re-emerging diseases of today.

Acknowledgement

We would like to thank administrators and medical technologists of Kalsin and Nakornphanom hospitals, personnel in district organizations, public health offices, community medical units and health-care centres in coordination, sample collection and patient information related to avian influenza disease control and technical support from Dr Watana Uwanit, Ms Pranee Thawatsupha, Ms Malinee Chittaganpitch and Mr Mongkol Jenjittikul. Technical inputs from Dr Rajesh Bhatia and Dr Sumonta Chaisomchit are highly appreciated. Sample information management system developed by Ms Darawan Viengyos greatly support the mobile one-stop service delivery. The project would not be possible without the initiation of Dr Paijit Warachit and Dr Pongpan Wongmanee. The project could be planned and implemented because of the guidance and support from Dr Manit Teeratantikanon, Director-General, Department of Medical Sciences.

References

Cervical cancer screening programme for low-resource settings: 
a pragmatic approach

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Abstract

Cervical cancer is the most common cancer among women in many developing countries. Despite the 
public health importance that cervical cancer deserves, there are no organised population based 
screening programmes. The health infrastructure and organizational aspects for such a screening 
programme based purely on conventional cytology (Pap smear) has many limitations at present. This 
paper presents the operational aspects and guidelines for undertaking population based screening for 
cervical cancer using a mix of approaches and which can be taken up through the existing health 
systems in India. The proposed strategy is to screen women in the age group of 30–59 years by visual 
inspection with acetic acid by trained health workers at the primary health centres. VIA positive women 
will be referred to the secondary level hospital for a single visit approach during which cytology, 
colposcopy and biopsy as indicated will be done along with colposcopically directed treatment. Further 
referrals will be made to a tertiary level hospital equipped for cancer care. Initiation of such a 
screening programme is a challenge, but can be achieved through a systematic approach. Sustained 
implementation of such programmes are essential to control this preventable cancer among women in 
developing countries.

Introduction

Cervical cancer is the second most common 
cancer among women worldwide. About 
288 000 women worldwide die of cervical 
cancer and at least 80% of deaths due to 
cervical cancer occur in the developing 
countries.1 In India, about 100 000 new cases 
of cervical cancer are expected to occur every 
year and this is likely to increase by 25% by 
2015.2 It is well established that the 
predominant risk factor is persistent infection 
with a high-risk ‘oncogenic’ type of human 
papilloma virus (HPV).3,4,5,6 The incidence of 
cervical cancer can be controlled to some extent 
by increasing health awareness and promoting 
genital hygiene, but a substantial impact on its 
incidence can be made only through organized 
population-based screening programmes. 

Cervical cancer can be detected in the 
pre-invasive stages by a sensitive screening 
method based on cytology, using Pap smears. 
Alternate strategies, such as visual inspection, 
have been widely advocated for use in low-
resource settings. Some developed countries
have organized population-based screening programmes based on Pap smear. Norway was the first country to introduce such a programme in 1963, and was followed by other Nordic countries. Time trends in mortality due to cervical cancer have shown a reduction of 34–80% in Iceland, Finland and Sweden, countries in which nationwide organized population-based programmes exist.7

Despite the fact that cervical cancer is the most common cancer among women in most developing countries, there are no well-organized, large-scale, sustained screening programmes. In India, about 80% of women present to the health facility in an advanced stage of the disease. The magnitude of the problem of cervical cancer and the potential for prevention make it imperative to identify a feasible strategy for carrying out organized screening programmes so that the burden posed by the disease can be reduced.

Review of literature

MEDLINE search carried out a review of the literature for the period 1965–2006. The studies addressed the role of certain risk factors, such as high parity, early age at marriage, low educational status, poor genital hygiene and multiple sexual partners, in causing cervical cancer.8,9,10,11 Recent research has established an aetiological link between human papilloma virus (HPV) infection and carcinoma of the cervix. The prevalence of HPV was reported to be 98.1% in cases of invasive cervical carcinoma in a hospital-based study in Delhi.4 Community-based studies showed that the prevalence of HPV among the general population ranged from 6.1% in Trivandrum (among married women) to 10.3% in Andhra Pradesh (among women of the age of 30 years and above).5,12

The Pap smear has been the conventional screening method worldwide. However, due to the operational difficulties in India, alternative low-cost methods like visual screening tests have been evaluated. Unaided visual inspection of the cervix (downstaging) has proved to be quite inaccurate in detecting cervical pre-cancers as well as cancers.13 Visual inspection after application of acetic acid (VIA) is relatively simple and easy to learn. It does not require laboratory involvement and paramedical workers can be trained to carry out the procedure. The results of the test are available immediately, which makes it possible to provide further investigations and management in the same sitting.

The sensitivity of VIA has been reported to range from 60–96% and its specificity from 82–88%.14,15,16,17 In a randomized controlled trial, the test positivity rate of VIA has been reported to be 14%, which is more or less at par with the rate reported by other cross-sectional studies.18 A modification of VIA, using low-power magnification devices, has been tried. The addition of magnification has not been found to improve the sensitivity and specificity of VIA.15 Another visual inspection method that has been evaluated is visual inspection after the application of Lugol’s iodine (VILI). The average sensitivity and specificity of this test have been reported to be 75.4% and 84.3%, respectively, in a large multicentric trial.15 Feasibility studies using visual methods in the hospital as well as field settings have shown that it is possible to train health workers to identify pre-invasive lesions.19,20,21 There is a growing interest in the potential uses of HPV DNA testing. A large multicentric cross-sectional study carried out in India observed that the sensitivity of HPV testing for detecting CIN2-3 lesions varied from 45.7–80.9% across the study sites. The specificity varied from 91.7–94.6%.22

Considering that various screening tests are available, there is a need to examine which would be the most feasible and cost-effective in the Indian setting. A large-cluster randomized trial, involving 131 178 women in rural India, reported the average total cost of screening 1000 women eligible for screening to be US$ 3917, US$ 6609 and US$ 11 779 with VIA, cytology and HPV respectively.23
National consultation

The review of the literature shows that there have been various initiatives on the prevention of cervical cancer in India. However, since no consensus was reached on a feasible strategy, a national workshop of experts in the various relevant fields was organized at the Postgraduate Institute in Chandigarh in November 2005 (Annex 1). This consultation came up with a feasible approach for screening for cervical cancer that can be adopted by the existing health system. This paper is based on the guidelines developed during the consultation.

Organization

The organization of a population-based screening programme for cervical cancer should be planned at the national level (Box 1). There should be clear-cut guidelines on the systematic implementation of such a programme.

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Box 1: Organized screening for cervical cancer

An organized screening programme should specify:

- The target population
- Screening intervals
- Coverage goals
- A mechanism for inviting women to attend screening services
- The screening test or tests to be used
- Strategies to ensure that all women found positive on screening are informed about the result
- A mechanism for referring women for check-up and treatment
- Treatment recommendations
- Indicators for monitoring and evaluating the screening programme


Strategy

Women in the age group of 30–59 years can be screened at the primary care level (primary health centre) by female health workers, using VIA. This can be followed by referral of VIA-positive cases to the secondary care level (district hospital), where Pap smear, colposcopy and biopsy (if required) will be performed, along with management of pre-invasive lesions. Tertiary centres equipped with cancer care facilities can act as referral centres for invasive lesions and for those cases that cannot be managed at the district hospital.

Sensitization of health system

The health administration and the various tiers of the health system, from the primary to the secondary and tertiary levels of health care, will have to be sensitized on the need for a screening programme for cervical cancer. It should be ensured that the health system takes up the programme as a routine activity rather than in a project mode. This will help to utilize the entire machinery of the health system and also reduce the duplication of efforts, especially in the areas of generating awareness and referral training. In order to guide the organization and implementation of the screening programme, we have prepared an algorithm which can be followed at the primary and secondary levels.

The conventional Pap smear has been recommended as the ideal screening test. However, in a developing country like India, which faces several operational difficulties, alternative methods like visual inspection have to be considered as the initial screening test. The recommended strategy for developing countries is, therefore, a mix of approaches for screening, followed by appropriate intervention and follow-up of those who are found to have positive results.
For the success of the screening programme, it is absolutely critical to train and periodically retrain those involved in screening (health workers, nurses, supervisors, medical officers). Separate structured modules and training programmes for programme managers, medical officers and paramedical staff will be required. This training/retraining can be implemented at community level and at different levels of health care.

**Sensitization of community**

Intensive information, education and communication (IEC) activities will be required to sensitize the community on the significance of the disease and the need to detect it early through screening. Simple and appropriate health messages will have to be disseminated in the local language, keeping in mind the local culture and traditions. Health workers should be trained and provided with IEC materials to help them interact with the target women on a one-to-one basis and motivate them. All efforts should be made to gain the cooperation of the community for these IEC activities. Administrative heads, political and religious leaders, and other stakeholders should be sensitized on the issue and their help should be sought to motivate the target population to take up screening.

**Primary health care level**

In India, the primary-level care is provided by primary health centres (PHC), each of which caters to a population of 30,000. The eligible women will be those who are in the age group of 30–59 years and are residents of the catchment area. Efforts should be made to screen 80% of the women in the target age group. The number of women who need to be screened and referred can be estimated as shown in Box 2.

### Box 2: Calculation of the number of eligible women in a PHC and the number requiring referral

1. Identify the size of the population under the PHC
   Example: = 30,000
2. Calculate the number of women in this area
   Example: 50% of population = 15,000
3. Estimate the number of women in target age group
   Example: 30% of target women = 4,500
4. 80% of the eligible women = 3,600
5. Women likely to be positive for VIA (15%) = 540

All eligible women will be informed and invited for screening at the PHC. Efforts should be made to screen 80% of the women in the target age group over a period of three to five years. Certain days should be designated for specific activities of the screening programme, e.g., immunization days especially for immunization activities. Similarly, a day should be designated for this activity so as to increase accessibility and ensure better organization. Screening should primarily be performed by trained female health workers using VIA. Screening activities at the PHC should be closely supervised by a medical officer who has been adequately trained. A screening card (Annex 2) should be made to keep a record of the findings and this should be given to the woman for future reference. All information that is relevant for the follow-up is to be recorded and kept in the PHC. The information system should include every woman’s clinical record, schedule of appointments, and referrals.

Women who are VIA-positive should be informed about the implication of the result, counselled and properly guided to attend the district hospital for further investigations and management. Those who are VIA-negative should be informed about the result and advised to come for repeat screening after five years. A woman can report to the PHC if she develops any symptoms.

The medical officer in charge of the health centre shall be responsible for supervising all
the activities of the health workers, proper maintenance of records, generating monthly activity reports and implementing the quality control measures as per the guidelines.

Secondary health care level

In India, the secondary level of care is provided by the district hospital, which has gynaecological, surgical and laboratory facilities for about 100 in-patients. In order to implement the cervical cancer screening programme, some expansion might be needed, especially in the areas of cytology, colposcopy and cryotherapy. Appropriate training of personnel will also be required. A designated nodal officer from the district hospital will be responsible for implementing the screening programme. The nodal officer will identify the medical and supporting staff to be involved in the programme and will arrange for their training. They will be trained to perform colposcopy, biopsy and cryotherapy, as required.

A screening clinic can be set up at the district hospital for the registration of VIA-positive women from the PHCs. This clinic should be operational on all working days. Each woman will be examined by a trained medical officer after informed consent has been obtained from her. The clinic should also offer primary screening facilities for women from the catchment area of the programme who report directly to the district hospital.

All VIA-positive women will have to get a Pap smear and repeat VIA, and will undergo colposcopy, irrespective of the VIA findings. The colposcopist may decide to treat the patient at the same sitting (if treatment is indicated), or may defer treatment till the biopsy report is available. If any abnormality is detected on colposcopy, a punch biopsy should be obtained. If a woman has an ectocervical lesion (any grade of CIN) that occupies less than three-fourths of the transformation zone and can be covered by cryo-probe, the treatment of choice would be cryotherapy. It is mandatory to obtain a punch biopsy prior to cryotherapy. Lesions which are not suitable for treatment by cryotherapy should be treated by loop electrosurgical excision procedure (LEEP). If this facility is not available in the district hospital, the patient should be referred to a tertiary centre nearby.

All women should be reviewed at the district hospital after one month in the light of the Pap result and biopsy report (in those cases in which a biopsy was taken). They should be clinically examined for any evidence of complications. No screening test or colposcopy should be done during this follow-up visit. If the Pap smear shows no epithelial abnormality, the woman may be advised to go for re-screening at the PHC after five years. If the Pap smear or biopsy shows any abnormality, further investigations and management will be carried out at the referral centre. The recommended protocol for the interventions and referral of patients at different levels is presented in Annex 3.

Monitoring and evaluation

A standard format for record-keeping can be followed at all levels. This can be a simple record on paper or it can be computer-based, e.g. the ‘ScreenReg’ software programme of the International Agency for Research on Cancer, Lyon. Ideally, the district hospital should not only maintain hard copies of the records in forms and registers, but also use a computerized system for data storage, wherever possible. It is mandatory to keep all the slides for a minimum period of five years.

A system should be put in place to ensure that women with abnormal results are notified and that women who are hard to locate are traced.

Some of the indicators for monitoring the programme are shown in Box 3.
### Issues and challenges

The implementation of an organized population-based screening programme will be a challenge in low-resource settings. Some of the issues which will have to be tackled are lack of awareness regarding cervical cancer, misconceptions about the screening tests, technical and organizational barriers caused by poorly organized health systems and weak infrastructure, the low priority accorded to the control of cervical cancer, and economic barriers. The strategy for screening described above aims to tackle the issue in a structured manner and constitutes a combination of approaches for intervention and follow-up of those found to have positive results. The entire programme has been structured in accordance with the existing health system. It is crucial to understand that screening for cervical cancer is not a one-time activity, but has to be gradually stepped up so that the target of screening 80% of the eligible women can be reached. Health services have to be upgraded simultaneously to meet the growing demands of the programme. Since the programme has various new components, it is suggested that piloting be undertaken in a population of about 100,000 (catchment area of three PHCs) in different states before the programme is taken up at the national level.

### Conclusion

“Screening by itself will not prevent a single case of cervical cancer. An effective system for follow-up and treatment of women who test positive is perhaps the most important component of a successful cervical cancer prevention programme.” This paper has briefly described a combination of approaches in a sequential manner for screening, management and follow-up for cervical cancer. This model can be applicable to low-resource settings in which screening by the conventional Pap smear is not feasible on a large scale. To make the programme a reality, it is essential to sensitize and motivate the policy-makers, the health system, the community and all stakeholders on the need for a cervical cancer control programme. If well planned and integrated into other routine health service activities, screening for cervical cancer can possibly also strengthen the health care system and improve its efficiency. Finally, sustained implementation of the programme is essential to control this preventable cancer.

### Acknowledgement

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References


Annex 1

List of participants
Expert Committee Meeting held on 18–19 November 2005,
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27. Ms Sunita Sharma, ANM, PGI
28. Ms Shakuntla Mehra, ANS, PGI
Annex 2

Cervical cancer screening card

(To be filled at the PHC)

State:  
Name:  
Age:  
ID No  
District PHC Year Registration no  
Address:  
VIA done on: -----/-------/----- (DD/MM/YYYY)  
VIA result:  
☐ Positive  
☐ Negative  
☐ Positive invasive cancer  
Done by:  

(To be filled at the District hospital)  
LMP: -----/-------/----- (DD/MM/YYYY)  
Parity:  
Complaints:  
☐ None  
☐ Vaginal discharge  
☐ Irregular bleeding  
☐ Post coital  
☐ Menorrhagia  
☐ Post menopausal bleeding  
☐ Others (specify)  
Contraception:  
☐ None  
☐ Barrier  
☐ Hormonal  
☐ IUCD  
☐ Tubal  
☐ Others  
Tests and procedures done at DH:  
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<td>Colposcopy</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Punch BX</td>
<td></td>
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Treatment:  
☐ Not required  
☐ Cryotherapy  
☐ LEEP  
☐ Others (specify)  

Advice:  
Signature  

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Annex 3

Recommended protocol for interventions and referral of patients at different levels

VIA at PHC

**POSITIVE**
- Refer to district hospital
  - Pap smear, VIA, colposcopy
    - CIN on colposcopy
      - Suitable for cryotherapy
        - Cryotherapy after punch biopsy
      - Not suitable for cryotherapy
        - LEEP/Refer
    - Follow-up after one month with Pap and biopsy report
      - Malignancy on biopsy
        - Refer to Tertiary centre
      - Treated for CIN
        - Colpo normal; Pap LSIL
      - Colpo normal; Pap HSIL
      - Colpo normal; Pap normal
        - Follow-up after one year at DH by Pap and colposcopy
          - Repeat colpo and punch biopsy even if colpo normal
            - Biopsy-positive
              - LEEP or cryotherapy
            - Biopsy-negative

**NEGATIVE**
- Repeat after five years
  - Give health education
Study of the utility of placental cord blood in meeting the transfusion needs of beta-thalassaemic patients

Niranjan Bhattacharya*

Abstract

Thalassaemia is a genetic defect that results in production of an abnormally low quantity of a given haemoglobin chain or chains. Countries such as India, Pakistan, Bangladesh and Iran have seen a conspicuous increase in the number of thalassaemic patients in recent years, partly due to a lack of genetic counselling and screening. Thalassaemia major patients receive frequent blood transfusions. Untreated thalassaemia major eventually leads to death usually by heart failure or complications of iron overload or transfusion-induced problems.

Placental umbilical cord blood—because of its rich mix of fetal and adult haemoglobin, high platelet and WBC count, a plasma filled with cytokine and growth factors, as well as its hypo-antigenic nature and altered metabolic profile—has the potential of emerging into a real and safe alternative to adult blood during emergencies due to any aetiology of blood loss and anaemia.

In the present series, 122 units of cord blood were transfused to 22 patients (male:female ratio 1:1, age varying from 6 months to 44 years) suffering from beta thalassaemia with severe anaemia [haemoglobin concentration varying from 3.5 to 5.9 gram per cent with mean haemoglobin 4.38±0.36 g/dl standard deviation (SD)]. The transfusion proved to be extremely effective as a substitute for adult concentrated red blood cell (RBC) transfusion.

The collection of the blood varied from 56 ml to 138 ml. After collection from consenting mothers undergoing lower uterine caesarean section, the blood was immediately preserved in the refrigerator and transfused within 72 hours.

The rise in haemoglobin levels within 72 hours of transfusion of two units of freshly collected cord blood was 0.6 g/dl to 1 g/dl—with the mean rise being 0.68±0.12 g/dl standard deviation—in the present series of transfusion. Each patient received two to eight units of freshly collected cord blood transfusion (two units at a time), depending on availability and compatibility. There was also a secondary rise of haemoglobin in each case as noted on the seventh-day estimation of the blood. We did not encounter a single case of immunological or non-immunological reaction.

Conflict of interest: There is no conflict of interest. The transfusion of placental blood was carried out at Bejoygarh State Hospital, Jadavpur, Kolkata, India, between the period April 1999 to August 2005.

Acknowledgements: The author acknowledges the support of Dr Surjakanta Misra, Minister of Health and Family Welfare, Government of West Bengal, India, for his support and cooperation. The author also acknowledges with gratitude the support of the patients who volunteered for the research. The author acknowledges the help and support of the Department of Science and Technology, Government of West Bengal, which supported the work with a grant to the author during the period 1999–2002. Without its support the work presented in this paper could not have been completed. The author also acknowledges the technical support of Ranbaxy Laboratories, Mumbai, India, for flow analysis cytometry reports, and Mahatma Gandhi Laboratory, Kolkata, India, for ferritin-level estimation.

Keywords: Transfusion, cord blood, safe, beta thalassaemia.

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Executive summary

Thalassaemia is a genetic defect that leads to the production of very low quantities of a given haemoglobin chain or chains. Of all the thalassaemia types, beta thalassaemia is the most life-threatening because if left untreated it can eventually lead to death. Without any cure in sight yet, thalassaemia patients require regular blood transfusion, which carries its own problems of infection or other transfusion-induced complications.

There is also the additional issue of availability of adequate safe blood in at least two of the regions of the world where this disease is most prevalent, i.e. South and South-East Asia, and West Asia. The current project kept these ground realities in mind. Earlier studies by the present group of researchers on cord blood transfusion in other diseases had shown that placental umbilical cord blood was a safe alternative for adult blood transfusion.

Cord blood contains a rich mix of fetal and adult haemoglobin, high platelet and WBC counts, as well as growth factors and plasma filled with cytokines. It has a better oxygen-carrying capacity than ordinary human blood. Moreover, it contains haematopoietic stem cells (CD34), endothelial progenitors, angiogenesis stimulating cells and mesenchymal stem cells, giving it a potential regenerative capability. Further, cord blood comes from the safe environment of the placenta, which acts as a sieve for infections and protects the fetus during its period of growth and maturation. Thus, cord blood has the requisite potential of being an excellent blood substitute and is, in addition to these qualities, abundantly available.

Introduction

Thalassaemia [from the Greek word thalassa, which means sea (because it was observed originally in persons of Mediterranean stock) + -emia], also known as Cooley’s anaemia, is an autosomal recessive genetic disorder affecting the haematopoietic system. It is usually more prevalent in the Mediterranean Sea region, West Asia and South and South-East Asia. It is characterized by anaemia and compromised haemoglobin transport throughout the body. There is decreased production of the beta component of haemoglobin, which is the primary carrier of oxygen (O₂) in the human bloodstream. The disease has various clinical ramifications depending on the stage and grade. Beta thalassaemia can be of three types: Type A—also known as thalassaemia minor (t. minor)—is mainly asymptomatic (trait), and can present with mild anaemia. Type B presents with hepatosplenomegaly (enlargement of the liver and spleen) and anaemia along with growth failure features. Type C is the major variety of beta thalassaemia in which there is severe anaemia and complications of excessive iron load in the body generally within one year of birth.

Thalassaemia can coexist with other haemoglobinopathies, the most common being:

1. haemoglobin E/thalassaemia, which is predominant in South and South-East Asia, including India and Thailand;
2. haemoglobin S/thalassaemia, which is common in Africa and the Mediterranean Sea region;
3. haemoglobin C/thalassaemia; and others.

An estimated 300,000 people suffer from thalassaemia major (t. major) globally.

There is no cure for thalassaemia. The best treatment available today consists of frequent transfusion of red blood cells—symptomatically every two to three weeks—to maintain a sufficient level of haemoglobin, along with management of the side-effects of the iron load by iron chelation therapy in order to remove excess iron. However, lifelong transfusion dependence can trigger many problems for thalassaemic patients. Other methods, therefore, are being tried in recent
years—for instance, bone marrow transplant. This has shown promise with some patients of thalassaemia major, more so because a successful transplant can eliminate the dependence on transfusion.

Another problem associated with treatment by blood transfusion is the availability of safe blood on a regular and continuing basis. Attempts are being made globally to make blood transfusions safer through the enforcement of stricter vigilance measures. Measures such as PCR or nano screening of hepatitis and HIV are being adopted in developed countries. There are also protocols for the inactivation of microbes in platelet units, use of plasma with reduced viral activity and liberalization of the use of red cell substitutes. However, the risks continue to remain. Some newly identified potential risks include the possibility of transmission of Creutzfeldt–Jakob disease (CJD) in its classical or variant form even after leucodepletion, as lymphocytes are a possible source of transmission of infection. The problem is compounded in under-resourced countries where blood transfusion itself can invite problems—such as transmission of HIV, hepatitis B, hepatitis C and malaria—due to lack of effective screening.

A safe, easily available blood substitute that will also be cost-effective is, therefore, a significant felt need. If this blood substitute also contains certain additional properties that can help in regeneration, it will be of greater use to thalassaemics. In this connection it is pertinent to recall an important phenomenon in the animal world: most animals, even herbivores such as the cow, swallow their afterbirth. The reason for this instinctive action by animals is now becoming apparent through recent research. There has been a global increase in research since 1989 on the use of umbilical cord blood stem cells as an easily available source of haematopoietic stem cells. These stem cells have been used for bone marrow transplantation not only because of their easy availability but also because of their potential to incite less graft-versus-host reaction due to the hypo-antigenic nature of the cells. Many important laboratories in the world have in the recent past been engaged in collecting cord blood for stem cell isolation and harvesting.

Stem cells in the cord blood, however, constitute only 0.01 per cent of the nucleated cells; the rest or 99.99 per cent of the cord blood is discarded because of its apparent uselessness. This blood is enriched since it nurtures the fetus, and has certain additional traits and qualities that enable it to perform this function. It contains higher haemoglobin, white blood cell (WBC) and platelet counts, and has growth factor and cytokine-rich plasma which has been protected in the sterile environment of the womb through antibodies against all potential infections.

Objective and methodology

The present paper deals with cord blood transfusion in thalassaemics with severe anaemia who needed immediate blood transfusion support but could not arrange fresh and concentrated RBC from any source. A group of such patients had applied to the ethical committee of Bejoygarh State Hospital, Jadavpur, Kolkata, India, for placental umbilical cord blood transfusion as an emergency procedure to combat the immediate crisis and volunteered for the study. The permission of the ethical committee was obtained for each case prior to the transfusions. The ethical committee attached to the hospital for this specific project was headed by Professor M.K. Chhetri, former Director of Health Services, Government of West Bengal.

The principal objective of this research was to ascertain whether locally available ABO-matched and screened placental umbilical cord blood can be a readily

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ABO is an antigenic system used for blood grouping (A: antigen A of the RBC membrane; B: for antigen B of the RBC membrane; O: absence of antigens A and B). ABO matching is a conventional practice before blood transfusion in vitro to check if there is clotting as a result of interaction of the donor’s antigen with the recipient’s antibody, in which case the transfusion is not recommended.
available safe blood substitute in place of adult blood for thalassaemia patients. A second objective was to find out if this blood contains properties that may be of further medical benefit to such patients. The Department of Science and Technology, Government of West Bengal, Kolkata, funded this project.

The main item required for transfusion in the thalassaemic patients was cord blood. A total of 122 units of human placental umbilical cord blood were collected from consenting mothers aseptically after lower uterine caesarean section under general or regional anaesthesia. The cord blood collection was abandoned if there was gross prematurity or dysmaturity, or the projected weight of the fetus was less than 2 kg, or if the mother was suffering from a specific disease such as hepatitis or HIV. Cord blood was collected only from informed, healthy mothers and with their full and unequivocal consent. The decision to proceed with the umbilical cord blood collection process was taken by the obstetrician only after the newborn was safely removed from the operation field and the anaesthetist attested to the stable physical condition of the mother. The cord was then disinfected by spirit/Betadine solution at the site of the proposed puncture of the umbilical vein and a 16 g needle was attached to a standard pediatric collection bag containing 14 ml anticoagulant citrate phosphate dextrose adenine solution, which was used for the purpose of collection. A second bag was used if the collection exceeded or neared 100 ml and a second prick was made at a proximal region after using a clamp at the first site of the prick. The blood was drawn by the force of gravity and usually 90% of the collection was completed within a minute; in most cases the blood flow ceased completely within two minutes due to clot formation. In case of any confusion or doubt about the condition of the newborn, a decision was taken to preserve the blood in consultation with the paediatrician for future use by the baby.

When the collection was complete, the blood bag tubing was closed, sealed and stored at a temperature of 1 ºC to 4 ºC after being tagged with the necessary identification markings. A sample of the cord blood collected from the placenta was immediately tested for blood group (Rh and ABO), HIV (1 and 2), hepatitis B and C, VDRL and malaria as per standard blood transfusion protocol. If there was any suspicion of contamination, the culture was put aside for identification of the pathogen, if any, through appropriate protocol, and the blood was declared unfit for transfusion.

In the present series, the amount of blood collected varied from 56 ml to 138 ml [mean 85 ml ± 7.3 ml SD, median 88 ml, mean packed cell volume 44.3 ± 3.2 SD, mean haemoglobin concentration 16.6 gram per cent ± 1.6 gram per cent SD]. After collection, the blood was immediately preserved in the refrigerator, as noted, and transfused within 72 hours. This cord blood was transfused to 22 patients with beta thalassaemia and with severe anaemia (haemoglobin concentrations varying from 3.5 to 5.9 gram per cent with mean haemoglobin of 4.38 ± 0.36 g/dl SD). The male:female ratio of the patient group was 1:1 with their ages ranging from six months to 44 years.

The transfusion of cord blood to the recipients, too, followed strict guidelines stipulated by the human ethical committee of the hospital which, as stated already, was headed by an emeritus professor of medicine. As per the project guidelines, a volunteer who wished to enrol for the cord blood transfusion programme had to have a haemoglobin count of below 6 gram per cent. Before the transfusion, the patient had to undergo a thorough clinical examination, including proper monitoring of blood pressure, pulse rate and respiration, and other cardinal and presenting features. Pre-transfusion, blood grouping, Hb/Tc/Dc/ESR/platelet count/Coombs test, C-reactive protein, urea, creatinine, bilirubin, sugar, ferritin, and all other investigations as per the requirements of the case were also performed on each patient. Hb electrophoresis was performed before and
after the transfusion to examine the impact of the same. The protocol was repeated 72 hours after transfusion and on the seventh day of transfusion.

The actual transfusion procedure was begun after necessary grouping and cross-matching of the specimens and thoroughly checking the identity of the patient. The cord blood was transfused by a blood transfusion set containing a filter (230 µm). For the initial 15 minutes or so the patient was carefully monitored for any transfusion-related reaction. Thereafter, if all went well the transfusion rate was increased and sustained till completion.

**Result and analysis**

Before analysing the results of the study, it is important to point out the advantages of cord blood as compared with adult blood for the purposes of transfusion. First, cord blood has a palpably greater oxygen-carrying capacity. Adult haemoglobin consists of 2 alpha and 2 beta polypeptide chains, each bound to a haem group, capable of binding with one molecule of oxygen. One gram of haemoglobin binds with 1.39 ml of oxygen. Therefore, 14 gram per cent of adult haemoglobin can carry, on an average, 19.46 ml of oxygen. Cord blood at term (36th week of pregnancy) carries on an average 16.8 gram per cent of haemoglobin, of which 20% belongs to the adult haemoglobin type (3.36 g) and 80% to the fetal haemoglobin type (13.44 g). The concentration of the fetal haemoglobin may increase further depending on fetal stress, maturity and several other feto-maternal factors. Fetal haemoglobin has the potential to carry up to 50% more oxygen than adult haemoglobin. One gram of fetal haemoglobin may carry up to 2.08 ml of oxygen. Thus, theoretically, the oxygen-carrying potential of 100 ml of cord blood would be around 32.62 ml, which is 67.62% more than the capacity of adult blood (19.46 ml oxygen/100 ml). This takes into account its fetal haemoglobin (2.08 ml oxygen-carrying capacity per gram of fetal haemoglobin) and adult haemoglobin components (1.39 ml oxygen-carrying capacity per gram of adult haemoglobin). Also, there is a potential advantage of the fetal haemoglobin (Bohr’s effect) by which it can carry more oxygen at low PCO₂ than at high PCO₂.

There are several factors which modify the oxygen-binding affinity of cord blood, for instance: (a) concentration of hydrogen ion, (b) carbon dioxide concentration in the blood, (c) body temperature, (d) 2-3 diphosphoglycerate concentration, etc. The blood volume of a term fetus is approximately 80–85 ml/kg. The placental vessel at term contains approximately 150 ml of blood. Cord blood contains three types of haemoglobin—HbF, HbA, HbA₂—of which HbF constitutes the major fraction (50%–85%). HbA accounts for 15%–40% of haemoglobin and HbA₂ is present only in trace amounts at birth. HbF has a greater oxygen affinity than HbA. The oxygen tension at which the haemoglobin of the cord blood is 50% saturated is 19-20 mmHg, 6-8 mmHg lower than that of normal adult blood. This shift to the left of the haemoglobin oxygen dissolution curve results from poor binding of the 2-3 diphosphoglycerate by HbF. These special features of cord blood may have certain positive implications for thalassaemia patients.

Apart from these advantages of cord blood, it should be reiterated that blood transfusion therapy in general carries certain risks, and the issue is whether these can be entirely avoided through cord blood.

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**Notes:**

1. Haem group is a prosthetic group that consists of an iron atom contained in the centre of a large heterocyclic organic ring called a porphyrin. Not all porphyrins contain iron, but a substantial fraction of porphyrin-containing metalloproteins have haem as their prosthetic subunit; these are known as haemoproteins.

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+++The carbon dioxide and partial pressure (PCO₂) indicates a respiratory problem: for a constant metabolic rate, the PCO₂ is determined entirely by ventilation. A high PCO₂ (respiratory acidosis) indicates under-ventilation and a low PCO₂ (respiratory alkalosis) hyper- or over-ventilation. PCO₂ levels can also become abnormal when the respiratory system is working to compensate for a metabolic issue so as to normalize the blood pH.
transfusion. The risks can be grossly categorized under two headings: immunological and non-immunological reactions. The immunological reactions are related to the stimulation of antibody production by foreign alloantigens by the different components of transfusion, e.g. RBC, leucocytes, platelets and plasma proteins. Alloimmunizations may lead to immunological reactions in case of future stimulation by a similar antigen. The commonly encountered immunological reactions are haemolytic reactions due to red cell incompatibility. Febrile or pulmonary reactions are related to antigens of leucocytes and platelets. Allergic and anaphylactoid reactions are related to antibodies and it is only very rarely that we can see graft-versus-host reactions due to engraftment of the transfused lymphocytes in case of immunosuppression. The commonly encountered non-immunological reactions are caused by the physical or chemical properties of the transfused blood/blood products due to bacterial or viral contamination or the circulatory load. Since freshly collected cord blood during lower uterine caesarean section comes from a safe and sterile environment in the operation theatre, one objective of the present study was to see if cord blood was safe for transfusion and to examine how far this was risk-free in the case of thalassaemia patients.

In the present series, as noted earlier, 22 patients aged between 6 months and 44 years and bearing a male-female ratio of 1:1 volunteered, and were cleared by the hospital ethical committee, for the cord blood transfusion protocol. One patient was suffering from serious bleeding (source: haemorrhoid, treated with ligation and interruption) and received 11 units of cord blood, six units being administered at one time. Three patients were administered eight units of transfusion (receiving 3–4 units at a stretch) while 12 patients received six units (three units at a time). All other patients received 2–3 units of cord blood, receiving at least two units at one time. Most of the patients presented with various complications, including malnutrition along with growth retardation (six cases); impaired liver function (six cases); hypofunction of the marrow (four cases); along with osteodystrophy; Elisa Tb positivity for IgA and IgM (five cases); mitral stenosis; incompetence; irregularity of menstrual periods; and hypothyroidism.

The haemoglobin concentration of the patients in the present series varied from 3.5 gram per cent to 5.9 gram per cent (mean 4.38±0.36 g/dl). Within 72 hours following the transfusion of two units of freshly collected cord blood, haemoglobin levels recorded a rise of between 0.6 gm/dl to 1 gm/dl, a mean rise of 0.68±0.12 gm/dl SD (vide series 2 of Graph 5, when compared with the pre-transfusion value, i.e. series 1). Each patient received two to eleven units of freshly collected cord blood transfusion (two units at a time) depending on availability and compatibility. All the patients tolerated the procedure and not a single episode of immunological or non-immunological reaction was encountered. Further, there was no rise in urea (Graph 1), creatinine (Graph 2), sugar (Graph 3) and bilirubin (Graph 4) levels from the pre-transfusion values. Thus, although the sample group was limited, the study categorically proved the clinical and metabolic safety levels of the procedure.
Further, as noted earlier, cord blood may have some additional advantages: a secondary rise of haemoglobin equivalent to 0.4 to 1 g/dl, with a mean rise of 0.56±0.12 g/dl SD, was noted on the seventh-day estimation of haemoglobin (vide series 3 of Graph 5). This could have been due to the impact of the cytokine stimulation effect of the cord blood on the host marrow of the thalassaemic patient (not verified as yet).

Additionally, there was a rise in the level of the peripheral blood of CD34 (haematopoietic stem cell marker) noticed on the seventh day after transfusion, without any myeloablation or immunosuppressive conditioning of the host system. There was also no priming of the host
system with growth factor or any other selective cytokine.

The flow analysis cytometry study (FACS) showed a rise in the peripheral blood CD34 level (Fig. 1) from the pre-transfusion level (the pre-cord blood transfusion peripheral blood CD34 normal range is up to 0.09%), varying from 8.13% (Fig. 2) to 31.95% (Fig. 3), in 72.7 per cent of the cases (one case where the FACS showed a 0.86% peripheral blood pre-transfusion level of CD34 is presented in Fig. 1). However, this came down to normal levels within three months in all the cases.

Yet another important finding was that there was a definite subjective sense of well-being in the recipients, which was visibly much more than that observed after their previous episodes of transfusions with concentrated RBC from adult sources. This may have been due to the cytokine and growth factor-rich plasma in cord blood, which has therapeutic implications.

**Discussion**

The contention of this paper is that placental umbilical cord whole blood is a safe blood alternative. Moreover, its additional properties present the potential to provide supplementary advantages. In beta thalassaemics requiring repeated blood transfusions, cord blood can have a therapeutic effect apart from the fact that this blood is in plentiful supply.

There are still millions of people—particularly in under-resourced countries—who die due to shortage of blood, and quite a few of these cases are thalassaemics. While it is a fact that over 80 million units of blood are collected every year around the globe, only
39% of this is collected in the developing world where 82% of the global population live. There is, on the other hand, no dearth of supply of cord blood potentially because there is no paucity of its source, the placenta. For instance, in India alone there are more than 20 million placentas produced as afterbirth every year.

There is also the question of safety. Increasing concern is expressed regarding the safety of adult blood. An estimated 13 million units of blood worldwide are not tested for the human immunodeficiency virus (HIV) or hepatitis viruses annually. In some developing countries, 80% of the blood supply comes from paid donors or replacement donors (relatives, friends or acquaintances) where the degree and possibility of infection may be high. Bloodborne diseases such as HIV, different forms of hepatitis and spongiform encephalitis have led to a redoubling of the continuing efforts globally to ensure the safety of blood for transfusion as well as to find a safe blood substitute. In no case has there been an immunological or non-immunological reaction, thus proving that cord blood could safely be used as a blood substitute. The present series has also proved its safe use in beta thalassaemia.

The research was substantiated further by a later project by clinical scientists from the University of Liverpool, working in collaboration with the Komfo Anokye Teaching Hospital at Kumashi, Ghana, who also used cord blood in paediatric anaemia. Their published report noted a substantial decrease in the mortality of children in sub-Saharan Africa suffering from severe anaemia after falciparum infection, with the use of cord blood, thus reiterating its safe and efficacious nature.

Cord blood also contains certain properties, absent or negligible in adult blood, which may help patients with certain diseases such as beta thalassaemia. One of these properties, as mentioned earlier, is the ability of fetal haemoglobin to carry more oxygen. Fetal haemoglobin is a natural stress response to haemoglobin synthesis. An attempt is made to preserve and augment this in case of thalassaemia by providing hydroxyurea or other similar drug supports. Other conditions such as pregnancy, diabetes, thyroid disease, or anti-epileptic drug therapy, can also increase fetal haemoglobin concentration.

**Update**

It is important to mention certain recent developments in this context. An additional
property of cord blood cells is their regenerative capability. Many recent publications have described a regenerative ability in several pre-clinical disease models. What must be noted is that cord blood contains not only haematopoietic stem cells (CD34) but also endothelial progenitors and angiogenesis-stimulating cells, as well as mesenchymal stem cells. Unrestricted somatic stem cells resembling embryonic stem cells have been detected in cord blood. Zhao et al. have identified a population of CD34 cells expressing OCT-4, Nanog, SSEA-3 and SSEA-4, which could differentiate into cells of the mesoderm, ectoderm and endoderm lineage. All this raises the possibility of using ABO-matched HLA randomized cord blood in the absence of host preconditioning. This could open the doors to a multitude of stem cell therapeutic applications. The experience of the present research (mentioned earlier) suggests that the rise of CD34 in the peripheral blood in HLA-randomized non-myeloablated hosts—which did not stimulate a graft-versus-host reaction in the thalassaemic patients—was possibly caused by the hypoimmune nature of cord blood cells. As such, these hypoimmune fetal cells with altered metabolic profiles are perhaps a gift of nature entrapped inside the placenta.

A query may be raised regarding the fate of the HLA-mismatched nucleated cells. Here it may be noted that the biological effects of mismatched cells, even if they are cleared by the immune system, may be beneficial in inflammatory pathologies through exertion of a Th2 phenotype, as seen in cases when women are administered their husbands’ lymphocytes. Furthermore, even if transplanted cells are cleared by the immune system, it is known that apoptotic cells can mediate various therapeutic anti-inflammatory effects that are clinically relevant. These effects are being scrutinized further in the follow-up studies on the thalassaemic patients.

**Conclusion**

Cord blood is the blood collected aseptically from the placenta after the birth of a healthy baby. Clinical research over the last 10 years has shown that cord blood can be used safely as a blood substitute. Moreover, it has higher haemoglobin content and contains growth factors, which have the potential to benefit patients suffering from varied diseases. There are about 100 million births globally every year, 20 million of them happening in India alone. Hence there is no dearth of placental supply in the world or, specifically, South and South-East Asia.

The safety of cord blood transfusion in beta-thalassaemic patients, which is on the rise in South and South-East Asia, is demonstrated in the present series since there was no graft-versus-host reaction or any other immunological or non-immunological reaction in any patient. There was also no hepatic or renal dysfunction due to this transfusion, and there has been a palpable sense of well-being among all the monitored recipients of cord blood.

The rise of CD34 in the peripheral blood, observed on the seventh day after cord blood transfusion in the current protocol, and which returned to normal levels within a period of three months, may have a bone marrow rejuvenating effect. This needs further study and may in the future open up new possibilities not only for the management of transfusion-dependent beta thalassaemia but also for other chronic diseases featuring anaemia. In conclusion, the results of the study imply that cord blood is a safe blood substitute with the extra potential for the treatment of thalassaemia major and can be used not only in emergencies but also as a genuine adult blood substitute.
References


Maternal and child health

The quality of care in nongovernmental organization-implemented Integrated Child Development Services in rural Vadodara, India

Meghana Daxini*, Shubhada Kanani**

Abstract

In many regions of India, nongovernmental organizations (NGOs) implement the Integrated Child Development Services (ICDS) programme. However, we do not have an answer to whether NGOs really ensure the quality of implementation that is expected of voluntary organizations. The Health Systems Research (HSR) framework is useful to study the ICDS system in the context of implementation by NGOs. This study aimed to assess, firstly the quality of implementation of selected ICDS services run by an NGO in rural Vadodara, and secondly the impact of the NGO-run ICDS on the mothers’ knowledge regarding infant and young child feeding (IYCF) practices and nutritional status of children below three.

Methods: We took semi-structured interviews of 50% of randomly-selectedanganwadi workers (AWWs) (N=20) and of mothers attending anganwadi centres (AWC) (N=38) and not attending AWC (N=28) to assess the quality and utilization of ICDS services and their knowledge regarding IYCF practices. The nutritional status (weight-for-age, height-for-age) of children aged 6–36 months (N=66) was assessed using anthropometric measurements and 24-hour diet recall method. The other methods were secondary data review of AWC records and spot observations of the AWCs implementing the services. Selected indicators were used to assess the level of quality of care (QOC).

Results: All AWWs were aware of the objectives of Growth Monitoring (GM) and Food Supplementation (FS), but several mothers (34–67%) were not aware of the purpose and benefits of these services. Most AWWs (70%) had little information on the objectives of the Nutrition Health Education (NHE) service and how it should ideally be implemented. Supervisors too had little clarity regarding what to supervise. Observation data revealed that vertical campaigns took up about one fifth of ICDS workers’ time during the study period and adversely affected functions like NHE. Despite the fact that the NGO had provided additional resources (e.g. enhanced food supplements) to the AWCs, the overall QOC in field-level implementation was sub-optimal. As a result, the mean calorie intake and nutritional status (weight-for-age and height-for-age) was equally poor among children attending AWCs and those not attending AWC. Hence, the NGO needs to pay adequate attention to QOC specially with respect to improving the functionaries’ competence before any substantial impact of ICDS can be expected.

Part I reports the findings pertaining to QOC in the ICDS system, while Part II presents the results pertaining to the impact of the ICDS.

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I. Management, availability and utilization of ICDS

According to the data of the National Family Health Survey (NFHS) III (2005–2006), there has unfortunately been no improvement in the prevalence of undernutrition among children under the age of three years in the state of Gujarat: 42% by height-for-age scores below -2SD and 47% by weight-for-age scores below -2SD.1 This is so despite the fact that the Integrated Child Development Services (ICDS) scheme was introduced in India and in Gujarat over three decades ago. In India as a whole, while the ICDS has brought several benefits (particularly a reduction in the prevalence of severe malnutrition among ICDS beneficiaries versus the non-ICDS population), there exist several lacunae which compromise the quality and impact of the ICDS.2

The lacunae include the continued neglect of children in the vulnerable age group of 0–3 years, a focus on management of malnutrition rather than its prevention, and poor implementation of ICDS services. A major factor responsible for the unsatisfactory impact of any national programme is poor quality of care (QOC), especially in the implementation of services at the field level. The ICDS has this shortcoming in several regions, as has been reported in the 2001 national-level ICDS consultation.3

The quality of health services can be assessed, improved and maintained with the help of Health Systems Research (HSR), as described by WHO. The HSR methodology is useful for examining and addressing those factors in the system which impinge upon the desired implementation and monitoring of nutrition services under the ICDS system.4 Health Systems Research involves the collection of information on services and systems with a view to assessing the need for them, examining their design and operation, and evaluating their efficiency, effectiveness and impact. It is part of the process of service development, its primarily aim being to improve services or their components.5 Further, if HSR (using both quantitative and qualitative research tools) is linked to advocacy, it would facilitate the acceptance of nutrition services in the health care system and the sustainability of innovations in these services.

NGOs implementing ICDS

It has been quite a few years now since the government of Gujarat handed over the implementation of some ICDS projects to NGOs in order to improve the functioning of the scheme. The NGOs take charge of some anganwadi centres (AWCs) in their respective areas. The underlying assumption is that NGOs function with flexibility and dedication, and can support the government effectively in managing its programmes. We are interested in answering the research question: “Do NGO systems support effective implementation of ICDS services? Do they pay adequate attention to the vulnerable below threes?”

Due to the paucity of literature on the strengths and weaknesses of the ICDS services run by NGOs, this study seeks to answer the above questions by exploring the perspectives of the functionaries and the beneficiaries, with respect to the following.

- The management, availability and utilization of ICDS services in the rural communities served by the NGO (QOC in the ICDS system)
- The beliefs and practices of the beneficiary families regarding infant and young child feeding (IYCF) and child care, and the nutritional status of children below three years of age (impact of ICDS)

Material and methods

Site of the study and sample selection

The study was carried out in the field areas of an NGO† in rural Vadodara, covering 40 AWCs. For clarity and focus, we selected three particular ICDS services which have a relatively

† The name of the NGO is not revealed to protect its identity.
greater influence on the nutritional status of the beneficiaries. These are Growth Monitoring (GM), Food Supplementation (FS) and Nutrition Health Education (NHE).

To study the functionary perspective, a sample of 20 NGO–ICDS anganwadi workers (AWWs) was randomly selected. As for the beneficiary perspective, 53 mothers of children below the age of three years, from four randomly selected AWCs, constituted the sample.

**Methods**

In order to explore the functionary perspective, semi-structured interview questionnaires were

<table>
<thead>
<tr>
<th>Components</th>
<th>Indicators of quality of care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Client needs</strong></td>
<td>• ICDS services meet beneficiaries’ needs in a timely manner</td>
</tr>
<tr>
<td>• Regular availability of services</td>
<td>• Utilization of services by beneficiary families</td>
</tr>
<tr>
<td><strong>Culturally appropriate services</strong></td>
<td>• Services are culturally appropriate, seek to reduce gender bias against girls</td>
</tr>
<tr>
<td>• No gender bias in delivery of services by AWW at the AWC; proactive efforts by AWW to reach girls</td>
<td>• Rate of utilization of services for girls and boys</td>
</tr>
<tr>
<td>• Monthly monitoring data is desegregated by gender</td>
<td></td>
</tr>
<tr>
<td><strong>Meeting short-term and long-term goals</strong></td>
<td>• There is a balance between the short-term and long-term goals of the services</td>
</tr>
<tr>
<td>• Short-term goal of ICDS—provision of services (food supplements, GM) to all beneficiaries</td>
<td>• Long-term goal—empowerment of women and effective implementation of NHE service</td>
</tr>
<tr>
<td><strong>Optimal use of resources</strong></td>
<td>• Human and material resources and money are efficiently managed, with a focus on human resource development</td>
</tr>
<tr>
<td>• Training of ICDS AWWs</td>
<td>• Implementing services with available resources, as per guidelines</td>
</tr>
<tr>
<td>— Timeliness of training</td>
<td>• Monitoring/supervision ensures</td>
</tr>
<tr>
<td>— Content and training methods</td>
<td>— Inclusion of QOC indicators in management information system (records, reports)</td>
</tr>
<tr>
<td>• Adequate coverage of eligible children and mothers</td>
<td>• Assessing quality of implementation by AWW and coverage of the services</td>
</tr>
<tr>
<td>• Each AWC enrolls and offers services to all eligible children (0–6 years of age) and pregnant or lactating women, as per norms</td>
<td>• Improvement in awareness among mothers regarding child health and nutrition</td>
</tr>
<tr>
<td>• Children below three and those in grades II, III and IV malnutrition are adequately covered</td>
<td>• Improvement in IYCF, child care practices and children’s intake of nutrients through complementary foods</td>
</tr>
<tr>
<td>• Number and duration of episodes of illness (diarrhoea, cold and fever)</td>
<td>• Increase in proportion of children in normal grade and grade I</td>
</tr>
<tr>
<td>• Infant mortality rate in the region</td>
<td></td>
</tr>
</tbody>
</table>
used to assess the AWWs’ knowledge and perceptions regarding the objectives and implementation of the selected ICDS services. We made extensive field notes on the basis of spot observations of the implementation of the three services and these yielded some valuable insights into the QOC. To study the beneficiary perspective, the mothers of children (6–36 months of age) from four randomly selected AWCs were interviewed to assess their knowledge and perceptions of the availability and utilization of ICDS services.

Table 1 lists the components of QOC and the indicators for assessing QOC that have been selected by this study. These have been adapted from Kanani (1998).6 Some of the indicators of QOC mentioned above were studied in the first phase of the study and are presented in Paper I and Paper II. The remaining indicators of QOC were studied as part of the intervention phase. The results of the intervention phase are being analysed.

Data analysis

The data were analysed using the EPI-info 6.04d computer package. Percentage responses were calculated for the perceptions of the AWWs and mothers.

Results

Role of the NGO system in ICDS implementation

The NGO contributed significantly to the improvement of QOC in the implementation of ICDS services. The enhanced inputs mentioned below are not normally a part of the government-run ICDS system.

Infrastructural support

The NGO provided the ICDS beneficiaries with medical care and effective referral back-up through a well-equipped hospital. A medical team visited one AWC once a week to monitor the health status of the children. Any severely malnourished or ill child was referred to the hospital run by the NGO for prompt treatment. Every year, each AWC received toys, picture books, paper, crayons, water colours, pencils, charts (for better learning), floor mats, glasses, earthen pots, cloth filters (to maintain hygiene) and other supplies from the NGO to help the AWCs function efficiently.

Programme support

Apart from what the government allocates for supplementary foods, the NGO contributed from its own funds to provide nutritious supplementary foods like maize muthiya (steamed snack), boiled chana (bengal gram whole), and khichadi (made from mung dal [green gram] and rice). All beneficiaries of 1–6 years of age were given supplementary foods, irrespective of their grade of malnutrition.

Nutrition education

Once a week, the NGO held demonstration-cum-supplementation sessions in which rab (wheat-based sweet gruel) was prepared and fed to children of the age of 7–12 months in 20 AWCs. The mothers attended these demonstration sessions, which were held in order to convince them of the need to initiate complementary foods by the time their children became six months old. The mothers were shown that their children can accept the gruel. They were taught how to make it at home.

Coordination support

The NGO appointed a full-time coordinator who acted as an effective link between the NGO functionaries and the ICDS beneficiaries, and who coordinated between the supervisors and AWWs. She initiated, organized and coordinated all the programmes and campaigns, and guided the functionaries on how to improve their functioning.

Profile of the AWWs

The majority (75%) of the 20 AWWs in the sample were educated up to the secondary level (10th standard) or higher and had more than five years’ work experience (65%). Only
one-third of the AWWs had received training prior to joining their jobs. About 50% received training as late as 1–3 years after starting work as an AWW. The government offered this training to all the AWWs, both of the urban and rural areas, at a designated Anganwadi Training Centre for Vadodara district. During the three-month training, the AWWs were made aware (both in theory as well as practically) of all the services offered by the AWC. The trainees were placed in different blocks for 15 days, during which they observed the AWC’s activities and learned how to carry out their functions in a field situation. None of the functionaries received refresher training during their job tenure. A majority (80%) of the AWWs reported that they had received one-day training on Growth Monitoring, during which they learned to accurately plot the weights of children on growth charts and identify the grades of malnutrition. Other one-day training programmes organized by the NGO included programmes on making useful articles from waste products, storytelling and recitation. These were aimed at improving the pre-school education service and were not related to nutrition or health care.

Table 2: Spot observations of three services to assess quality of care in implementation

<table>
<thead>
<tr>
<th>Observations on supplementary feeding</th>
<th>Out of 25 visits, no. of times observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of the children enrolled, both boys and girls were given food supplement.</td>
<td>25</td>
</tr>
<tr>
<td>Children took the food supplement home.</td>
<td>12</td>
</tr>
<tr>
<td>The AWWs did not persuade or encourage the mothers to make their children eat the food supplement at the AWC.</td>
<td>18</td>
</tr>
<tr>
<td>The food supplement was given in tiffins and not serving plates in some AWCs.</td>
<td>12</td>
</tr>
<tr>
<td>Children picked up food littered on the floor and ate it. The AWWs did not ensure hygiene.</td>
<td>15</td>
</tr>
<tr>
<td>Before and after the food was served, the children were made to dip their hands in a bucket of water kept outside the AWC.</td>
<td>8</td>
</tr>
<tr>
<td>A helper or AWW took away the left over food.</td>
<td>10</td>
</tr>
<tr>
<td>Few pregnant and lactating mothers came to the AWCs to take the food supplement.</td>
<td>15</td>
</tr>
<tr>
<td>No standard measures for cooking or serving were used.</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations on growth monitoring</th>
<th>Out of 8 visits, no. of times observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>The AWWs took care to include both boys and girls.</td>
<td>8</td>
</tr>
<tr>
<td>The AWWs did not weigh the children correctly.</td>
<td>5</td>
</tr>
<tr>
<td>The AWWs were concerned mainly with filling up registers to make the MPR report.</td>
<td>6</td>
</tr>
<tr>
<td>A baby weighing pan balance was used to weigh very young infants, but weighing was done inaccurately.</td>
<td>2</td>
</tr>
<tr>
<td>One AWW copied the values of the previous month in the current month column without weighing 50% of the children.</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations on nutrition health education</th>
<th>Out of 35 visits, no. of times observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutritional counselling was not given to the mothers at the time of growth monitoring.</td>
<td>35</td>
</tr>
<tr>
<td>No IEC materials were used.</td>
<td>35</td>
</tr>
<tr>
<td>NHE was not imparted, whether through group meetings or home visits. This was confirmed by the responses of the mothers during their interviews.</td>
<td>35</td>
</tr>
<tr>
<td>The mothers had not seen the growth chart.</td>
<td>35</td>
</tr>
</tbody>
</table>
The supervisors were not given any pre-service training by the government. On-job training was given by the coordinator, who helped the supervisors monitor the AWC activities.

**Field observations**

Spot observations of the three services made at all 40 AWCs yielded some valuable insights into the quality of implementation (Table 2).

**Anganwadi workers**

**Supplementary nutrition**

Although the supplementary foods cooked at most of the AWCs were palatable, the way they were cooked and the size of the servings varied across different centres. Hygiene was not maintained at many AWCs. Pregnant and lactating mothers took the food supplements home.

**Rab supplementation**

The rab supplementation programme undertaken by 20 AWCs was poorly implemented. For example, there was no standardized recipe and the mothers were not given any counselling. Monitoring of the programme by the supervisors was sporadic. Of the few mothers who reported being aware of this programme, none was taught how to cook rab at home.

**Growth monitoring**

This service was reduced to merely an exercise in taking and recording the children’s weight. The mothers were not given education on nutrition.

<table>
<thead>
<tr>
<th>One year of the study period</th>
<th>Vertical campaigns</th>
<th>Approximate no. of days devoted by AWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Pulse Polio programme, Republic Day celebration</td>
<td>5</td>
</tr>
<tr>
<td>February–March</td>
<td>Survey in their respective areas, Women’s Day celebration</td>
<td>10</td>
</tr>
<tr>
<td>April</td>
<td>World Health Day celebration, Pulse Polio programme</td>
<td>6</td>
</tr>
<tr>
<td>June–July</td>
<td>Hygiene and Sanitation Week, cleanliness drive</td>
<td>7</td>
</tr>
<tr>
<td>August</td>
<td>Health care activities to celebrate Indian independence, Breastfeeding Week</td>
<td>10</td>
</tr>
<tr>
<td>September</td>
<td>Nutrition Week</td>
<td>7</td>
</tr>
<tr>
<td>November</td>
<td>Children’s Day celebration, Bal Mela, picnics</td>
<td>7</td>
</tr>
<tr>
<td>December</td>
<td>Pre-preparation for Pulse Polio programme in the first week of December and January</td>
<td>4</td>
</tr>
</tbody>
</table>

Total no. of days devoted by AWW 56 (approx. two months)

Total no. of days in a year 365

Minus 52 Sundays −52

Minus Diwali break −7

Minus summer break −15

Minus official holidays (national and cultural festivals) −14

Minus salary payment meeting and MPR meeting (once every month) −24

Effective working days = 253

Note: As seen above, 56 days out of 253 working days (22% of the time) went into vertical campaigns.
| Table 4: Knowledge of AWWs and mothers of children (6–36 months of age) regarding availability and utilization of selected ICDS services |
|-------------------------------------------------------------------------------------------------|-------|-----------------|-------|
| **Responses of the AWWs (N=20)** | % | **Responses of the mothers (N=53)** | % |
| **What are the objectives of GM?** | | **What are the benefits of GM?** |
| • To know whether the child is gaining or losing weight | 65 | • Improvement in the nutritional status of the child | 53 |
| • To know the grade of malnutrition of the child | 50 | • Do not know the benefits | 42 |
| **What is the procedure of GM?** | | **What is the information given at the time of GM?** |
| • Use Salter scale for children of 1–3 years of age | 80 | • AWW tells whether weight has increased or decreased | 62 |
| • Take weight and record in the register | 60 | • No information is given | 26 |
| • Fill in the growth card | 60 | | |
| • Do the gradation | 60 | **Women who have NOT seen the growth card:** | |
| Ensuring that both boys and girls are covered during GM | 100 | **Suggestions to improve this service:** | |
| | | • Give information regarding weight gain | 26 |
| | | • Do not know | 59 |
| **What are the objectives of FS?** | | **What are the benefits of FS?** |
| • To see that the child receives SF at the AWC | 80 | The child goes to AWC to receive supplementary foods | 30 |
| • To improve the child’s nutritional status for his/her growth and development | 40 | Government orders AWWs to give supplementary foods. | 19 |
| **Is there a change in the health status of children due to FS?** | | Do not know | 34 |
| • Nutritional status improves | 68 | **Is there a change in the health status of children due to FS?** | |
| • Child learns to eat | 31 | • Yes | 30 |
| | | • No | 43 |
| **What are the objectives of NHE?** | | **Are you aware of any NHE given in the AWC?** |
| • To improve breastfeeding/complementary feeding practices | 70 | • Yes | 28 |
| • To improve the food intake of pregnant and lactating women | 40 | • No | 72 |
| **What are the benefits of NHE?** | | **What are the benefits you get from this service?** |
| • Improvement in the health status of the child | 60 | • Information regarding care of children | 20 |
| • Improvement in the health status of the mother | 20 | • Improvement in hygiene | 13 |
| • Increased awareness regarding family planning | 20 | • Do not know | 67 |
| • Increased awareness regarding immunization | 15 | **What are the topics covered?** | |
| **What are the topics covered under NHE?** | | • Send children to AWC | 4 |
| • Immunization | 50 | • Improve the child’s food habits | 4 |
| • Breastfeeding/complementary feeding practices | 45 | • Do not know | 89 |
| • Growth monitoring | 35 | **Is there a difference in the health status of the child?** | |
| **Has NHE led to a change in the health status of the beneficiaries?** | | • Yes | 13 |
| • Has improved the health status of children | 55 | • No | 87 |
| • Has brought down mortality and morbidity in children | 35 | | |
Nutrition health education

Nutrition health education was not imparted either through group meetings or home visits, and the use of information, education and communication (IEC) material was nonexistent.

Other activities

About one-third of the AWWs’ working hours were spent on conducting surveys, filling up registers and making monthly progress reports. This left them with little time to attend to their basic duties, including the job of making regular home visits. Further, ICDS functionaries had to look after a host of vertical campaigns (pulse polio campaign, demographic surveys and other activities), many of which were not directly related to the primary objectives of the ICDS and which also deprived them of a significant proportion (about one-fifth) of their work time (Table 3). For time-intensive activities like NHE and empowerment of women for better child care (a key objective of the ICDS), scanty efforts were made in the time available, as can be seen in Table 2.

Supervisors

The supervisors performed most of the job functions expected of them, but provided little guidance to the AWWs on how to improve the quality of the implementation of a few services. They monitored the supplementary feeding service efficiently in terms of the quality of the food supplements given and the coverage of the service. However, they did not ensure uniformity in the preparation of the food or consistency in the size of the servings. They did not guide the AWWs on the process of imparting effective NHE during growth monitoring at any point during the period of the study. They checked the home visit registers, but did not accompany the AWWs on their home visits. Writing reports and filling registers took around 50% of their work time.

Functionaries’ and beneficiaries’ knowledge and perceptions of availability and utilization of ICDS services

Table 4 compares the differences in the responses of the mothers and AWWs as established by interviews. A majority of the AWWs (65–80%) were aware of the objectives of GM and food supplementation, but had little knowledge regarding NHE. The objective of this service – that is, to enhance the capability of the mother to look after the nutritional, health and developmental needs of her children through relevant NHE – remained largely unfulfilled. The AWWs gave a general response that ‘their services improved the nutritional status of children and mothers’. The interviews with the mothers revealed a dismal picture. In contrast to the AWWs, who had at least some level of awareness, most mothers’ knowledge of any of the three services was negligible. Only 53% of them were aware of the purpose of GM and none had seen the growth card. Spot observations subsequently corroborated that none of the AWWs used the growth card to impart nutrition education to the mothers. The mothers’ perception was that supplementary foods were distributed mainly to gather children at the AWCs and because ‘AWWs were ordered by the government to do so’ (sarkar kahe atle apvu pade). Only a few mothers (28%) were aware of the NHE activities being conducted at the AWCs. According to the mothers, none of the AWWs made home visits to impart nutrition education. A majority felt that they attained no benefit from ICDS and that there was no improvement in the nutritional status of their children.

Discussion

Quality of care should be the focus in all aspects of management, such as training, planning the logistics of supplies, implementation, monitoring and supervision. It is a consistent observation that lacunae appear in QOC at the field level even when a
programme is well planned and investments have been made in training and programme infrastructure. The present study illustrates this amply.

A health systems research framework is useful for understanding a given programme in the total context of the system in which it functions, in this case, the ICDS programme in an NGO system. This framework is especially useful for studying the QOC of a given programme. Frameworks for studying QOC have been elucidated for family planning and women's programmes, but have not been explored adequately for nutrition programmes.7

Kanani (1998) has come up with a comprehensive framework focusing on the QOC elements of child health and nutrition programmes.6 Using this framework, our observation of the ICDS services, together with the individual interviews of the functionaries and beneficiary mothers, revealed the following.

- FS was regularly available and well utilized by children, but poorly utilized by mothers.
- There was no gender bias in terms of the delivery of services. However, we did not observe any proactive efforts to counsel the families of girl children to ensure optimal care of and attention to girls.
- Services with greater visibility and short-term targets were given more attention, whereas the important ICDS service which has the long-term goal of empowering women and families through nutrition education was neglected.
- Keeping in mind the QOC indicators as regards implementation, there were several drawbacks, such as lack of standardization in the quantity of food served, poor hygiene, and excessive focus on registers and records, at the expense of community contacts through home visits. In addition, there was hardly any focus on QOC in monitoring and supervision. Lack of timely and adequate field-based training (for AWWs and supervisor) also contributed to poor implementation.
- The absence of regular home visits and lack of nutrition education resulted in poor awareness of the ICDS services, particularly their objectives and benefits, among the mothers.

It is unfortunate that due to neglect of services like NHE, sub-optimal child feeding and health care practices continue to prevail among poor communities. A social assessment study of the ICDS in Gujarat also corroborated this fact and reported that NHE was among the weakest services of the ICDS.8

There is a serious need to review the issue of the utilization of AWWs for numerous community-level programmes by several sectors to meet their own sectoral objectives (without any real benefit to the ICDS). The Department of Women and Child Development (both at the central and state levels) needs to ensure that the primary focus is on quality implementation of ICDS services and that the AWW is allowed but limited involvement in other community activities like adult education, krishi yatra, gram sabha, school health programmes and surveys. Even if the AWW is paid for these other activities, they should not be undertaken at the cost the ICDS services. It is high time we stopped considering the AWW a ‘conveniently available functionary’ for numerous community development tasks. The functions of the AWWs and the accredited social health activists (ASHAs), who have been appointed under the National Rural Health Mission as part of a recent initiative, need to be reviewed with a view to enhance the QOC of services delivered by them.

The NGO we studied appointed a coordinator to oversee the ICDS activities, but paid little attention to the aspect of improving the competence of the functionaries (the
supervisor and AWWs). This, together with the drawbacks mentioned earlier, has made for an unsatisfactory level of QOC. Given this scenario, it is not surprising that the ICDS programme has not been able to make significant progress in achieving its objectives, even though it is being implemented in an NGO system. Both the NGO systems and government departments need to seriously consider the recommendations of the national consultation on ICDS (2001), which are as follows.

- The emphasis of GM activities should be shifted from detection of malnutrition to prevention and rehabilitation. Counselling should be an integral component of the GM service.
- Coverage of children below the age of three years (the most vulnerable group) needs to be improved.
- Home visits by AWWs need to be regular and meaningful, and should aim to empower mothers in the sphere of childcare.
- There is a need to enhance the communication skills of AWWs to make them capable of promoting behavioural change in the areas of health, nutrition and development of young children. There is an urgent need to strengthen the NHE service.

The results of the present study thus highlight the need to strengthen the competence of the functionaries to improve the quality of the implementation of nutrition services. The NGOs implementing the ICDS should seriously and consistently implement the recommendations of the national consultation, especially those pertaining to the communication and supervisory skills of the ICDS functionaries. Greater attention must be paid to the improvement of IYCF practices, as these are essential for reducing malnutrition among children below the age of three years. This is endorsed by the Global Strategy for IYCF (2003).\(^9\) The NGOs implementing the ICDS need to reflect on the question of how they can help the ICDS meet its goals.

II. Impact of ICDS services on infant and young child-feeding practices of mothers, and on the nutritional status of children under three

The ICDS, the largest child nutrition programme in India, has not helped to reduce the high prevalence of undernutrition among children under three years of age. According to the global strategy on IYCF, child malnutrition is intimately related to inappropriate IYCF practices and occurs primarily during the first two years.\(^9\) Undesirable IYCF practices persist in India, even though the ICDS scheme was introduced over 30 years ago. Many NGOs in the state of Gujarat have taken on the responsibility of implementing the ICDS both in the rural and urban areas. Our first research paper focused on the effectiveness and quality of NGO-implemented ICDS services (specifically, Growth Monitoring, Food Supplementation and Nutrition Health Education) among children below the age of three years in rural Vadodara. Using the Health Systems Research framework, we found that the quality of implementation is poor and that ICDS services implemented by NGOs are not necessarily free of the weaknesses that government-implemented ICDS services suffer from. Paper II reports on the impact of these services on the beneficiary mothers’ knowledge of IYCF practices and on the nutritional status of children under three years of age.

The objectives of this study were:

- To understand the perspectives of the functionaries and beneficiaries with respect to IYCF and child health care practices in rural communities.
- To study the nutritional status of the children (6–36 months of age) in
terms of the prevalence of undernutrition (weight-for-age and height-for-age) and intake of food nutrients.

Material and methods

Site of the study and sample selection

The study was carried out in the field areas of an NGO in rural Vadodara, covering 40 AWCs. To examine the functionaries’ perspective, we studied a sample of 20 randomly selected AWWs. These were the same functionaries who were interviewed for Part I of this study.

Methods

To study the perspective of the functionaries, semi-structured interview questionnaires were used to assess the AWWs’ knowledge of IYCF practices. As for the beneficiaries’ perspective, the mothers of children (those attending AWCs: N=38; those not attending AWCs: N=28) from four randomly selected villages were interviewed to assess their knowledge of and practices related to IYCF and child health care. Further, the nutritional status of their children (6–36 months of age) was assessed using anthropometric indicators. The 24-hour diet recall method was employed to collect data on the nutrient adequacy of the foods, especially the calorie and micronutrient intake from complementary foods (CF), consumed by the children.

Data analysis

The weight and height of the children were measured using standard procedures and equipment.10 The data were analysed using the EPI-info 6.04d computer package. Percentage responses were calculated for the perceptions of the AWWs and mothers. Mean and standard errors were calculated for the actual intake and percentage of Recommended Daily Allowance (RDA) met for various nutrients (i.e. energy, iron and vitamin A). For children, the WHO growth standards (2007) were used as the reference standards for WAZ and HAZ.11 The prevalence of malnutrition was defined as the percentage of children with z scores below -2SD WAZ (underweight) and -2SD HAZ (stunted).

Results

Perceptions of AWWs regarding IYCF and child health care practices

All 20 AWWs believed that the child should be fed breast milk immediately after birth (Table 5). A majority (50–90%) were aware of the advantages of colostrum: “Yellow milk gives the child immunity to fight diseases” (piłu dhavan to balak ne rog same ladva ni shakti aape). The majority were also aware of the right age to initiate CF (six months), as well as the various types of foods that can be initiated as CF (liquids and semi-solid foods like rab, khichadi and dal water). However, they did not know much about the quantity of food to be given during each meal. Half of them believed that a child below the age of one year should be fed 1–2 teaspoons (5–10 ml) for each meal, a quantity which would not give the child his/her daily requirements of all nutrients from CF. Most of the AWWs (95%) reported that active feeding was important. Thus, the AWWs’ awareness regarding IYCF and child health care practices was fairly adequate, other than the fact that they did not know about the quantity of CF required by the child.

Did the AWWs’ knowledge bring about changes in the beliefs and practices of mothers in the community?

As mentioned earlier, the mothers of children (6–36 months) attending AWCs (AT-AWC) (N=38) and not attending AWCs (NAT-AWC) (N=28) were interviewed and their responses compared. The children in the AT-AWC category were those who regularly used the
GM and FS services. The NHE service was very poorly implemented (sporadic and unplanned), and hence, only the GM and FS services were considered.

**IYCF practices (focus on complementary feeding)**

The data indicated that the initiation of CF was delayed (beyond six months) in both groups: 55% in the AT-AWC group and 81% in the NAT-AWC group (Table 6). Only around 20% of mothers in the AT-AWC group and 7% in the NAT-AWC group initiated CF at six months. Though mothers from both groups fed dal, rice, roti, vegetables and fruit as CF to their children, a significantly higher number of mothers from the AT-AWC group fed vegetables to their children compared to mothers in the NAT-AWC group, who fed mostly cereals with some pulse. This shows that mothers in the NAT-AWC group had a poor knowledge of micronutrient-rich foods like fruits and vegetables. Sixty-four per cent of mothers in the AT-AWC group felt that their child would become healthy if given CF, whereas around one-third of the mothers in the other group believed that their child would

---

**Table 5: Perceptions of AWWs regarding IYCF and child health care practices**

<table>
<thead>
<tr>
<th>Responses</th>
<th>(N=20)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Till what age should the child be exclusively breastfed?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• &lt;6 months</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>• 6 months</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td><strong>From what age should complementary foods be initiated?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• &lt;6 months</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>• 6 months</td>
<td>11</td>
<td>55</td>
</tr>
<tr>
<td>• &gt;6 months</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td><strong>What are the benefits of complementary feeding?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Child becomes healthy</td>
<td>11</td>
<td>55</td>
</tr>
<tr>
<td>• Helps physical and mental growth and development of child</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td><strong>What are the harmful effects of delayed feeding?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Child becomes malnourished and will not gain weight</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td>• Child will not learn to eat</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td><strong>What type of CF should be fed to the child?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Khichadi</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>• Fruits</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>• Rab</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td>• Dal water</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td><strong>What is the best way to feed the child?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Encourage him/her to finish the meal</td>
<td>19</td>
<td>95</td>
</tr>
<tr>
<td>• Sit with him/her</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td><strong>Why do you think the child falls ill?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Because he/she consumes less food / inappropriate food</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>• Because of unhygienic conditions / environment</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td><strong>What are the causes of malnutrition?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Food deficiency</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>• Illness and infection</td>
<td>11</td>
<td>55</td>
</tr>
</tbody>
</table>

Note: Only major perceptions are presented in the table. The responses may add up to more than 100% due to multiple responses.
not remain hungry (bhukh na lage) or would be satisfied (ami rahe) if fed CF. Very few mothers from either group prepared special foods (sheera, dal water, khichadi and rice water) for their children. Active feeding (sitting with the child while he/she eats, encouraging the child to eat more, giving a second helping) was not a popular practice in either group.

Table 6: Knowledge and practices of mothers of children (6–36 months) regarding IYCF and child health care practices

<table>
<thead>
<tr>
<th>Responses</th>
<th>Attending AW (N=38)</th>
<th>Not attending AW (N=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of CF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• &lt;6 months</td>
<td>8 22.3</td>
<td>3 11.1</td>
</tr>
<tr>
<td>• 6 months</td>
<td>7 19.5</td>
<td>2 7.4</td>
</tr>
<tr>
<td>• 7–9 months</td>
<td>7 19.5</td>
<td>10 37.0</td>
</tr>
<tr>
<td>• &gt;9 months</td>
<td>13 36.2</td>
<td>12 44.4</td>
</tr>
<tr>
<td>CF given to child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dal</td>
<td>13 36.0</td>
<td>18 66.7*</td>
</tr>
<tr>
<td>• Rice</td>
<td>12 33.3</td>
<td>17 63.0*</td>
</tr>
<tr>
<td>• Roti</td>
<td>29 80.6</td>
<td>19 70.4</td>
</tr>
<tr>
<td>• Vegetables</td>
<td>24 66.7*</td>
<td>10 37.0</td>
</tr>
<tr>
<td>• Fruits</td>
<td>26 72.2</td>
<td>15 55.6</td>
</tr>
<tr>
<td>Reason for initiation of CF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Because breast milk is insufficient</td>
<td>8 22.2</td>
<td>5 18.5</td>
</tr>
<tr>
<td>• Because child is grown up</td>
<td>11 30.6</td>
<td>4 14.8</td>
</tr>
<tr>
<td>• Because child has started sitting / walking</td>
<td>5 13.9</td>
<td>2 7.4</td>
</tr>
<tr>
<td>Benefits of CF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Child remains healthy</td>
<td>23 63.9*</td>
<td>10 37</td>
</tr>
<tr>
<td>• Child remains playful</td>
<td>8 22.2</td>
<td>0 0</td>
</tr>
<tr>
<td>No special foods given to child</td>
<td>30 83.3</td>
<td>20 74.1</td>
</tr>
<tr>
<td>Active feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Encourage child to finish meal</td>
<td>5 13.9</td>
<td>10 37.0</td>
</tr>
<tr>
<td>• Feed on demand</td>
<td>26 72.2</td>
<td>18 66.7</td>
</tr>
<tr>
<td>• Give food and leave child alone to finish meal</td>
<td>18 50.0</td>
<td>10 37.0</td>
</tr>
<tr>
<td>Prevalence of illness in children</td>
<td>24 63.2</td>
<td>20 71.4</td>
</tr>
<tr>
<td>Reasons for child’s illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Evil eye</td>
<td>29 76.3</td>
<td>17 60.7</td>
</tr>
<tr>
<td>• Child consumes less food / inappropriate food</td>
<td>11 28.9</td>
<td>4 14.3</td>
</tr>
<tr>
<td>• Illness is a normal part of development</td>
<td>7 18.4</td>
<td>8 28.6</td>
</tr>
<tr>
<td>• Child bathes in cold water, drinks cold water</td>
<td>5 13.3</td>
<td>3 10.7</td>
</tr>
<tr>
<td>Does diet have a role in determining child’s health?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Yes</td>
<td>35 92.1</td>
<td>21 75.0</td>
</tr>
<tr>
<td>• No</td>
<td>2 5.3</td>
<td>3 10.7</td>
</tr>
<tr>
<td>Causes of malnutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Food deficiency</td>
<td>17 44.7</td>
<td>9 32.1</td>
</tr>
<tr>
<td>• Illness and infection</td>
<td>16 42.1</td>
<td>7 25.0</td>
</tr>
</tbody>
</table>

*p <0.05
Note: Only major perceptions are presented in the table.
The responses may add up to more than 100% due to multiple responses.
**Morbidity profile and treatment-seeking behaviour**

Since morbidity is an important contributor to malnutrition, we studied the morbidity profile and treatment-seeking behaviour of the families. The prevalence of morbidity was high in both groups (AT-AWC: 63%; NAT-AWC: 71%) during the last 15 days of the interviews. The reasons given by the mothers in the AT-AWC group for their child’s illness were inappropriate. An equal proportion of mothers from the other group perceived illness to be a normal part of child development. Mothers in the AT-AWC group were better able to describe a healthy or weak child than were mothers in the NAT-AWC group. Besides seeking treatment from a doctor, significantly more mothers (76%) in the AT-AWC group than in the NAT-AWC group (50%) stated that children should be taken to AWCs to get the illness treated. The majority of the mothers (over 75%) in both groups believed that diet plays a role in determining a child’s health. However, mothers from the AT-AWC group had a better knowledge of the causes of malnutrition and were better informed about micronutrient-rich CF (fruits and vegetables). They were also better off in terms of treatment-seeking behaviour.

**Nutritional status of children (6–36 months)**

Figure 1 depicts the difference between AT-AWC and NAT-AWC children in terms of the prevalence of underweight, using the WHO (2007) standards. The prevalence of underweight (WAZ below -2SD) was slightly higher among children of the AT-AWC group (71%) than those in the NAT-AWC group (63%), while the prevalence of severe underweight (WAZ below -3 SD) was almost similar in both groups. Comparing the
prevalence among two age groups, more children of the age of 24–36 months were underweight than were children from the younger age group. Children of the age of 6–23 months were those who were breastfed as well as given complementary foods. Since they received nutrition both from breast milk and CF, they were less susceptible to undernutrition. Children in the older age group were dependent only on CF as their source of nutrients, which was inadequate.

The prevalence of stunting (HAZ below -2SD) was high in both groups (AT-AWC: 71%; NAT-AWC: 68%) (Figure 2). Similar to the trends seen in underweight, older children suffered from high levels of stunting compared to younger ones.

**Nutrient intake**

There was no significant difference between the energy intake of children of both groups (AT-AWC: 44%; NAT-AWC: 40%) (Figure 3). However, there was a marked difference between the energy RDAs of children of the two age groups (6–23 months – AT-AWC: 62%; NAT-AWC: 45%, and 24–36 months – AT-AWC: 38%; NAT-AWC: 33%). The relatively higher calorie intake among younger children may partly explain the lower prevalence of underweight among these children than among children in the older age group, who had a lower calorie intake.

The micronutrient intake (iron and vitamin A) was better among children in the AT-AWC group than those in the other group. Children attending AWCs could meet around one-third of the day’s iron requirement, whereas children from the other group met only 23% of the RDA. Similarly, the vitamin A intake of the children in the NAT-AWC group was much below the daily vitamin A requirement (12% RDA) and was much lower than that of children in the AT-AWC group (28% RDA). These results tally with the response of the mothers from the AT-AWC group, who knew of the importance of feeding their children fruits and vegetables.

To conclude, the mothers of children attending AWCs were better informed about selected IYCF practices than were those not attending AWCs. Though the mean energy and micronutrient intake of the children attending AWCs were higher than those of the children in the other group, their nutritional status by WAZ and HAZ were similar. These results are not surprising in view of the finding that NHE was among the worst implemented ICDS services. Nutrition counselling was not
given to the mothers of children below three years of age even during the GM activities.

**Discussion**

Infant and young child feeding practices continue to be unsatisfactory and the prevalence of malnutrition remains high in regions covered by the ICDS. Lack of exclusive breastfeeding and delayed introduction of complementary feeding (introduction of foods beyond 12 or even 18 months of age) has been reported.\(^{12,13}\) Exclusive breastfeeding till six months is practised only by 48% of mothers in Gujarat. This is similar to the national average (46%).\(^{15}\) There has been no significant change in IYCF practices in the period between NFHS II (1998–1999) and NFHS III (2005–2006). Complementary feeding practices (timely initiation) have not improved and only half the children are introduced to CF at the age of 6–9 months.\(^{14,15}\) Also, the quantity and quality (nutrient adequacy) of the CF given is deplorably low. The mothers’ knowledge of the type of CF to be given and the frequency of feeding tends to be very poor.\(^{13,14,15}\)

This study reveals the unsatisfactory state of affairs with respect to IYCF in rural Vadodara, where an NGO is implementing the ICDS. There is a need to strengthen nutrition education and communication through the ICDS, and the NGO should focus on this area.

**Does participation in ICDS make a difference in calorie intake and nutritional status?**

It was discouraging to note that there was no significant difference between the children in the AT-AWC group and those in the NAT-AWC group as far as the prevalence of malnutrition was concerned. Thus, the impact
of the ICDS is negligible even in the case of children who attend AWCs regularly because the overall quality of care is sub-optimal. It is also possible that since the more disadvantaged groups usually avail themselves of ICDS services more regularly than the relatively better off families in the same community, and since these children are likely to have a poorer nutritional status, the ICDS brings them on par with those not attending AWCs. This is an important contribution.

Evaluations of the ICDS in the country indicate a reduction primarily in the prevalence of severe malnutrition. A study in Chandigarh reported that only severe grades (III, IV) of malnutrition were less prevalent among ICDS beneficiaries (4%) than among non-ICDS (6%) beneficiaries. The overall prevalence of protein energy malnutrition was significantly higher among ICDS beneficiaries (54%) than among non-ICDS beneficiaries (47%), perhaps because it is the poorer families which make use of the ICDS services, as mentioned above.

Among the various services offered under the ICDS scheme, NHE is a service that can have a significant impact on the nutritional status of children below three years of age. There is a need to shift the emphasis of NHE from the mere transfer of information to communication aimed at promoting behavioural change in the areas of health, nutrition and development of young children. Proactive efforts to encourage participation of the community are also required.

The World Food Programme (India) and CARE in 1997 assisted the Nutrition and Health Education (NHED) project in three blocks of Rajasthan, with the goal of reducing malnutrition among child beneficiaries of the ICDS. Training programmes were organized for ICDS functionaries to improve their skills and knowledge as far as the nutrition and health of mothers, pregnant women and children are concerned. There was a significant improvement in areas related to the treatment of diseases and immunization. However, the AWWs’ knowledge of diet, nutrition and health promotion remained poor. Thus, the project recommended that such training should be ongoing and should be made part of the system.

To conclude, the results of this study highlight the need to strengthen the competence of functionaries to improve the implementation of the nutrition-related services of the ICDS, especially NHE, in order to improve the IYCF practices of mothers so that malnutrition among children under three years of age can be reduced.

References

1. National Family Health Survey. NFHS-3 National Reports. New Delhi, 2006 www.nfhsindia.org


Programme management

Enhancing performance and efficiency through reduction in the processing time involved in management of the fellowship programme — A WHO/SEARO perspective

M. Muzaherul Huq*

Introduction

The fellowship programme provides opportunities through group or individual training and study of health matters that may not be available in the candidate’s own country; facilitates international exchange of scientific knowledge and transfer of technology; and provides specialist training in the candidate’s own country, provided suitable facilities exist there. Implementation of the fellowship programme involves several internal and external stakeholders/partners. The internal stakeholders for Education and Training Support (ETS) are the technical units, and the budget, finance and travel units. The external stakeholders include the governments/ministries, host training institutions and fellows. Thus, the effectiveness of the fellowship programme greatly depends on the timely contributions of these stakeholders.

The ETS unit in the Regional Office for South-East Asia (SEARO) is the focal point for the management of training activities being implemented in the Region through the fellowship mechanism. It is responsible for processing the fellowship requests, e.g. the placement of fellows, award of fellowships, and evaluation and monitoring of the quality of fellowship trainings being organized by WHO.

Purpose

The ETS unit in SEARO conducted a study in line with the WHO Regional Office for Eastern Mediterranean’s paper entitled “Processing time in fellowships implementation”, published in September 2007, to evaluate its fellowship processes and procedures and assess the progress made over the last decade to improve the performance of the unit. The purpose of this paper is to (1) review the fellowship process and its mechanism and identify the factors responsible for any delay in its implementation; (2) review the existing measures/initiatives taken to reduce the time spent on processing fellowships; (3) suggest measures that can further enhance the implementation of the fellowship programme; and (4) orient the stakeholders on the mechanism of the fellowships and the role of ETS in improving the efficiency of the implementation of the fellowship programme.

Fellowship process

The fellowship mechanism comprises seven steps, namely, application received (AR), placement requested (PR), application withdrawn (AW), fellowship awarded (FA), fellowship cancelled (FC), fellowship terminated (FT) and utilization report received (UR). In the first stage, the ETS unit has to scrutinize the fellowship application forms (FAF) received from countries to check whether they are complete and include the necessary
The first five stages involve coordination between the ETS unit and other stakeholders and are, therefore, crucial in the implementation of the fellowship programme.

The time consumed within WHO can be minimized through the use of efficient processes so that adequate time is made available to the external stakeholders for obtaining government clearance and formulating the programme. The revised Financial Rules on Delivery Principle call for the use of funds within the same biennium and further necessitate the elimination of procedural delays to make the programme more effective and delivery-oriented.

The following are the common factors that have been observed to cause delays in the above five stages of the fellowship processing system:

(1) Sponsoring level
- Lack of/vague area/field of study in the detailed workplans, lack of adequate/alternative funds, delay due to changes in programme and identification/availability of alternative funds;
- Last-minute changes/withdrawal of nominations, cancellations after award;
- Delay in release of the fellows/lag time taken for administrative clearances;
- In case of pre-acceptance, lack of host pre-approvals; and
- Piecemeal submission of FAFs in group placements.

(2) Fellows’ level
- Illegible and incomplete FAFs;
- Unclear and vague learning objectives;
- Delayed submission of details/lack of clarity;
- Non-availability of candidate for a particular period due to personal reasons; and
- Non-availability of passport and visa in time.

(3) Country office
- Poor review of essential and material particulars/facts;
- Lack of government approval;
- Ineligible candidates, repetitive nominations;
- Delays in response;
- Incomplete and unclear AMS code; and
- Travel-related delays.

(4) Regional Office level
- Delays in clearance time taken in technical units;
- Problems related to the linking of Activity Management System (AMS) data with that of the Administration and Finance Information (AFI) system, and lengthy processing of programme changes, etc.
- Delays due to temporary systems failure in ETS/Budget and Finance units; and
- Travel-related delays.

(5) Host country and institutional level
- Delays in government clearances beyond lag time;
- Delayed acceptance by host institutions because of their other commitments;
- Delays due to negotiations in case of high tuition fees;
- Lack of details of programme and logistics and lack of related correspondence; and
- Delays due to security reasons/internal disturbances.

**Case studies**

**Clearance time taken by technical units**

The ETS unit conducted a case study in February 2007 to assess the time taken by technical units in the Regional Office in clearing fellowship placement proposals. Data available in the e-Document Management System were used in the study. The review revealed that between January 2006 and January 2007, a total of 709 placement requests were referred to technical units for their advice on the candidate’s suitability, the relevance of the request, appropriateness to the suggested field of study, institution, and so on. The technical units cleared 62% of the requests within five days of receipt. They took more than five days to clear the remaining 38% (18%, 10% and 10% of the requests were cleared between 6–10 days, 11–20 days and beyond 20 days of receipt, respectively). The placement requests were sent to 37 technical units for technical review and were grouped department-wise, as shown in the table and figure 1 below.

**Table: Time taken to clear fellowship placement proposals by departments in SEARO (January 2006–January 2007)**

<table>
<thead>
<tr>
<th>Department</th>
<th>1–5 days (Average 2.5 days)</th>
<th>6–10 days (Average 5 days)</th>
<th>11–20 days (Average 10 days)</th>
<th>Above 20 days (20+ days)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicable Diseases (CDS)</td>
<td>123</td>
<td>27</td>
<td>22</td>
<td>23</td>
<td>195</td>
</tr>
<tr>
<td>Administration and Finance (DAF)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Deputy Regional Director (DRD)</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Family and Community Health (FCH)</td>
<td>59</td>
<td>28</td>
<td>1</td>
<td>10</td>
<td>98</td>
</tr>
<tr>
<td>Health Systems Development (HSD)</td>
<td>196</td>
<td>34</td>
<td>13</td>
<td>9</td>
<td>252</td>
</tr>
<tr>
<td>Non-communicable Diseases and Mental Health (NMH)</td>
<td>45</td>
<td>20</td>
<td>26</td>
<td>26</td>
<td>117</td>
</tr>
<tr>
<td>Sustainable Development and Healthy Environments (SDE)</td>
<td>10</td>
<td>15</td>
<td>10</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>438 (62%)</strong></td>
<td><strong>130 (18%)</strong></td>
<td><strong>72 (10%)</strong></td>
<td><strong>69 (10%)</strong></td>
<td><strong>709</strong></td>
</tr>
</tbody>
</table>

**Figure 1: Number of days taken for clearance of fellowship files in departments (January 2006–January 2007)**

(source: [image])
In the 90% of cases in which there was 1–20 days’ delay, the Sustainable Development and Healthy Environments (SDE) and Non-communicable Diseases and Mental Health (NMH) departments took an average time of 5.7 and 5.2 days, respectively, for technical clearance. While the Communicable Diseases (CDS) and Deputy Regional Director (DRD) departments took 3.9 days each, the Health Systems Development (HSD) department took an average time of 3.3 days (Figure 2).

![Figure 2: Average time taken for clearance of fellowship files (by department)](image)

In respect of the remaining 10% of cases which received technical clearance after a delay of more than 20 days, and which involved 69 files, the NMH and CDS departments had a greater number of files to clear, i.e. 26 and 23, respectively. The FCH and HSD departments received 10 and 9 files, respectively. The average number of days taken for the technical clearance of the files of these 10% of cases was not worked out as it was open-ended.

On the basis of this evidence, the technical units were requested to clear the placement files promptly to achieve overall efficiency in the implementation of the fellowship programme.

### Lag time required for fellowships

Another review was conducted by the Regional Office to assess the lag time required for a fellowship to mature and get implemented on the basis of the achievement of the delivery principle. The data used for the review were from three time periods spanning seven biennia, namely, 1994–1999 (3869 cases), 2000–2005 (3148 cases), and 2006 onwards (914 cases). While the average lag time for the first period (1994–1999) was 140–155 days, it fell to 100 days during 2000–2005 due to the use of technological aids. In the period beyond 2005, there has been a marked decline in the average lag time to 60–75 days. Thus, the lag time has fallen by approximately 50% over the decade. This achievement is attributed to various initiatives, including the following:

1. Biennium-specific work plan guidelines were developed by ETS units and provided to the country office staff to enable them to adequately plan their fellowship programmes and include them in their biennial work plans.
An effort has been made to identify new training institutions that can impart quality training with minimum lag time within and outside the region through the maintenance of a Regional Directory of Training Institutions, an interactive web-based platform developed by the ETS unit for the exchange of information related to training institutions between various stakeholders.

Group training of fellows from the same country or different SEAR countries has been conducted from time to time to eliminate piecemeal processing of similar trainings.

The Proposal Tracking System is being used for electronic registration of FAFs and onward processing at the monitoring, placement, award and post-award stages.

The e-Document Management System is being used for the storage, retrieval and generation of monitoring reports.

The MS Outlook follow-up system is being used to track follow-up actions.

The ETS unit is making extensive use of e-mail, fax and Global Private Network (GPN)/telephone for day-to-day communication with the stakeholders.

There is continuous distribution of training-related brochures and fliers to countries to enable them to choose appropriate training programmes and send timely nominations.

The country focal points for fellowships have been receiving orientation on the various processes and procedures being followed for fellowship trainings and their input is sought on how to improve the efficiency of the system further.

A tracking path for the implementation of the fellowship programme within the ETS unit has been developed to identify processes which are likely to suffer from delays and periodic reviews are conducted to streamline these processes to reduce avoidable delays. The tracking path tracks the fellowship processes by categorizing them into four tangible stages—the planning, placement, award and post-award stages.

The above initiatives have contributed significantly to the reduction in the processing time and have improved the overall efficiency of the implementation of the fellowship programme. They have lent cohesion and uniformity to the various steps, and have helped improve the understanding and awareness of the regional and country staff.

New initiatives

The ETS unit will strive to further reduce the processing time to an average benchmark of 50 days in the biennium 2008–2009. To achieve this, the following initiatives are being planned.

The electronic files of training programmes will be placed on the ETS web page to allow countries to have “read access” to all information related to the ongoing training programmes.

A system is under development to monitor the planned fellowship activities in the work plans. It would proactively and periodically inform the country offices of the status of completed training programmes and alert them on those programmes which are yet to be implemented.

Biennial retreats of the country focal points for fellowships will be organized to orient them on various
changes in the processes and procedures, and to identify gaps. The focal points will be encouraged to interact on how to bridge the gaps and adopt a participatory approach towards better implementation of the fellowship programme through efficient time management.

Conclusion

The fellowship programme is a collaborative activity involving multiple stakeholders, both within and outside WHO. Cohesion and uniformity in its processes and procedures will considerably strengthen the collaborative effort and reduce gaps in its implementation. The ETS unit will continue to work towards improving efficiency through the following:

1. Mechanization of its processes through increased use of web-based tools for processing, monitoring and evaluation of fellowships.

2. Capacity-building through regular orientation of the staff of the country and regional offices in fellowship processes and procedures.

3. Bridging communication gaps by providing concise and clear guidelines both to the internal and external stakeholders, and effective use of various communication channels.

4. Streamlining and strengthening the monitoring and evaluation procedures of the ETS unit to improve the efficiency of the unit.

Acknowledgements

Mr. R. Krishnan, National Professional Officer (Fellowships), Education and Training Support (ETS) unit, WHO/SEARO

Ms. Y. Ramani, Assistant (Placement), ETS unit, WHO/SEARO

Reference

Processing Time in Fellowships Implementation by Dr. Ali Hassanabadi (EMRO/WHO), Training and Fellowship (UN Inter-Agency Newsletter), Issue 2, Page 5, September 2007.
Public Health Lounge, Colombo

The Regional Director, Dr Samlee Plianbangchang, inaugurated the Public Health Lounge in Colombo, Sri Lanka on 11 April 2008. Speaking at the opening, Dr Samlee said, “I congratulate the Ministry of Healthcare and Nutrition of the Government of Sri Lanka and the College of Community Physicians for taking another significant step towards strengthening of public health in the country. This Public Health Lounge will take us a long way forward in promoting the development of public health professionals in Sri Lanka. Public health is not new – its principle and practice date back more than a century. Today, we need to revisit public health and to re-examine its principle and practice. There are many reasons to do so.”

Emphasizing the importance of public health, Dr Samlee continued, “The goal of health has indeed become a social goal. It has transcended the traditional parameters of health. We need to revisit public health in order to keep pace with the global changes of today. Certainly, there is a need to strengthen our public health infrastructure and public health workforce. More attention is needed for the public health workforce, especially health-care people working at the community and grassroots levels. These people are community-based workers and community volunteers. They can effectively help ensure that health care reaches the unreached, the poor, the underprivileged, the marginalized and the vulnerable.”

The Regional Director concluded, “Strengthening public health infrastructure and the public health workforce is accorded highest priority in the WHO South-East Asia Region. We promote and support the development and strengthening of public health education institutions. The South-East Asia Public Health Education Institutions Network (SEAPHEIN) was established to provide such kind of promotion and support. I wish the Public Health Lounge all the best and all success in its operation.”

Keeping health facilities safe from disasters

A regional consultation of Member countries of the South-East Asia Region was organized in the Regional Office from 15–17 April 2008. Delivering the Regional Director’s message on the opening day, Deputy Regional Director Dr Poonam Khetrapal Singh said, “I would like to begin by presenting a picture of how vulnerable health facilities are to disasters in countries of our Region with a few illustrative examples:

- During the Gujarat earthquake of January 2001, 3,812 health facilities were destroyed. There was a total collapse of the health infrastructure in Kutch district, which was the worst affected. The cost of reconstruction for the health sector alone was estimated at US$ 60 million.
- During the earthquake and Tsunami of 26 December 2004:
– 30 of the 240 health clinics in Indonesia’s Aceh province were destroyed, 77 others were damaged seriously and 40 suffered minor damage. As many as 700 health workers (of an estimated 9800 in the province) died or were reported missing.
– In Maldives, one regular hospital, two atoll hospitals and 20 health centres were destroyed. As many as 5000 people had to be evacuated from 13 islands.
– In Sri Lanka 92 health facilities, including 35 hospitals, were destroyed.

“The most significant effort we have seen made on this issue is structural and nonstructural vulnerability assessments of hospitals and blood banks in Kathmandu Valley, Nepal. This was undertaken by WHO in partnership with the Ministry of Health and the National Society for Earthquake Technology, Nepal. Under this joint effort, assessments and appropriate training for mass casualty management were also conducted to support the needs of hospitals. Other private health facilities have also followed suit in strengthening their hospitals. However, we need to involve many sectors so that the appropriate resources are in place and that the laws, standards and regulations are implemented,” Dr Singh stated.

The Deputy Regional Director concluded, “Let me say that health concerns are the primary motivation/incentive behind any action taken to reduce disaster risks. Therefore, the health sector must play a pivotal role in disaster reduction at local, national and international levels for many reasons, including the protection of infrastructure and delivery of health care when they are most needed. There is an urgent need for all actors represented in this consultation to jointly develop a framework for action for an integrated common community approach to disaster risk reduction instead of the many sector-specific approaches that prevail.”

World Health Assembly charts bold new course of action for WHO

The Sixty-first Session of the World Health Assembly took place in Geneva during May 19–24. It was attended by a record 2704 participants from 190 nations, and discussed a number of public health issues and adopted several resolutions to set WHO on a course to tackle longstanding, new and looming threats to global public health. A public health breakthrough was achieved with the key resolution on removing intellectual property barriers to essential research and using innovative methods to encourage research, development and access to medicines for the common diseases of the developing world.

“This is a major breakthrough for public health that will benefit many millions of people for many years to come,” said WHO Director-General Dr Margaret Chan. “This is a contribution to fairness in health and is proactive public health at its very best.”

The Health Assembly endorsed a six-year action plan to tackle what are now the leading threats to human health: noncommunicable diseases. These diseases – particularly cardiovascular diseases, diabetes, cancers and chronic respiratory diseases – caused 60% of all deaths globally in 2005 (estimated at 35 million deaths). Low- and middle-income countries are the worst affected by these diseases, which are largely preventable by modifying four common risk factors: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol.

The Health Assembly’s actions were not limited to new challenges. Delegates also reaffirmed their commitments to eradicating polio and preparing for an influenza pandemic. Other actions included:
Global Immunization Strategy: Vaccines already prevent 2 to 3 million deaths a year but the Health Assembly noted that they are still underutilized. Delegates directed WHO to help countries reach higher immunization coverage and to encourage development of new vaccines.

Migrant health: Member States requested WHO to assess the health aspects in migrant environments and to explore options to improve the health of migrants.

“Health leaders from around the world have joined together in a united front on many big and difficult issues,” said Dr Chan during the concluding session of the Health Assembly. “You consistently demonstrated a desire to reach consensus, and showed great flexibility in achieving compromise despite some significant differences.”

World No Tobacco Day 2008

The theme of the 2008 World No Tobacco Day (31 May) is “Tobacco-free youth”. In his message, the Regional Director, Dr Samlee Plianbangchang, said, “The focus of this year is to protect youth from experimenting with tobacco and becoming regular users, through a comprehensive ban on all forms of direct and indirect tobacco advertising, promotion of tobacco products and sponsorship by the tobacco industry. The slogan “Ban All Tobacco Advertising, Promotion and Sponsorship” stresses the need to counter the tactics of the tobacco industry that attempts to normalize tobacco use by portraying it as an ordinary consumer product and by spreading misleading information about the dangers and health hazards of tobacco use. The South-East Asia Region has nearly 500 million people between the ages of 10 and 24 years. They are aggressively targeted by the tobacco industry to make them become tobacco users. According to the Global Tobacco Use surveys, most people begin the use of tobacco before the age of 18, but almost a quarter of these young people start using tobacco even before the age of 10. These young people usually underestimate the risk of addiction to nicotine and the tragic health consequences that follow.”

The Regional Director added, “National campaigns to create smoke-free environments for protecting youth are gaining ground. Given the importance of protecting future generations, there is an urgent need to recognize the widespread problem of tobacco use especially among youth due to unabated advertisement, promotion and sponsorship of tobacco products that take advantage of weak legislation and enforcement in many countries. All sectors of the government need to work together to counter industry tactics and to work together for tobacco control.”

Dr Samlee concluded, “I would specifically urge young people to refrain from smoking and using other tobacco products and to get involved in a campaign to educate other youths on how the tobacco industry uses direct and indirect advertising, promotion and sponsorship to persuade young people to smoke or use other forms of tobacco.”

Strengthening national health research systems

The Asia-Pacific Preparatory Meeting for the Bamako Global Ministerial Forum on Research for Health was held from 10 to 12 June 2008 in Bangkok, Thailand. Delivering his opening remarks on the occasion, the Regional Director Dr Samlee Plianbangchang said, “This gathering is one in a series of regional consultations to prepare for the Bamako Global Ministerial Forum on “Research for Health”, to be held in Bamako, Mali, Africa, in November this year. This forum is another milestone for the global efforts to ensure effective research for health. The Bamako Global Ministerial Forum aims to review progress of the previous global health
research activities, such as the International Conference on Health Research for Development, held in Bangkok, Thailand in 2000, and the Ministerial Summit on Health Research held in Mexico in 2004. The Bamako Forum intends to place “research for health” within the wider context of “research for development”. This is to ensure effective coordination of global efforts in research in tackling today’s health challenges. Within the broad context of research for health, the Bamako Global Ministerial Forum will pay particular attention to: leadership improvement; engagement of all relevant constituencies; and increasing accountability of various stakeholders.”

The Regional Director concluded, “All countries in the world have committed to the Millennium Development Goals (MDGs). These goals are a means towards poverty alleviation and sustainable development that are the prerequisites for good health. But it is apparent now that the achievement of these goals is at risk in many parts of the world. Research support to ensure attainment of health-related MDGs, especially MDGs 4, 5 and 6, by the year 2015 is urgently required.”

Thirty years of WHO’s Health-for-All Goal

Delivering the keynote address at the International Conference on “Healthy People for a Healthy World” at Bangkok, Thailand, on 25 June 2008, the Regional Director, WHO South-East Asia Region, Dr Samlee Plianbangchang, elucidated his views on “Thirty years of WHO’s Health for All Goal”.

“With increasing magnitude and severity of health problems in the world, the thirtieth World Health Assembly in 1977 decided that the social target of governments and WHO should be the attainment by all citizens of a level of health that will permit them to lead a socially and economically productive life. This decision was really historic; it marked the starting point of the global movement for ‘health for all’. The overriding consideration behind this decision was the principle that health is a basic human right and a worldwide social goal; and that health is essential for the satisfaction of basic human needs,” Dr Samlee said.

“There is an important consideration that needs to be clearly understood in connection with health for all. The HFA goal does not envisage all people to be completely free from any ailments; physical, mental or social. With HFA, people may still continue harbouring certain illnesses; silent or with a certain degree of declared morbidity. All people should have a longevity of life that can permit them to enjoy a socially and economically satisfying and productive life. With HFA, we will continue fighting diseases and disabilities while at the same time intensifying our investment in health promotion. Health promotion and disease prevention are the strategies that focus their interventions on health risks and health determinants. It is the strategy that has to be implemented through complete integration between social measures and technological tools. Let us continue pursuing our unending efforts to advocate for more political will, and for decisive political commitment to the development of national health systems based on the HFA/PHC principle,” the Regional Director concluded.

Human resource planning for HIV/AIDS

Addressing the workshop on human resource planning for HIV/AIDS at Paro, Bhutan, on 22–25 July 2008, the Regional Director, Dr Samlee Plianbangchang, said: “Human resource in the context of a national HIV/AIDS programme is a broad subject. This is especially when HIV/AIDS is considered to be not only a health but also a social and economic problem and when health is an issue of physical, mental and social well-being. HIV/AIDS considerably affects mental and social well-being because of the nature of the disease. The National HIV/AIDS programmes need to be multisectoral and multidisciplinary; involving a wide range of players and stakeholders in its prevention and control.”
“Social stigma and discrimination create psychosocial barriers between the infected and the service-providers that are very difficult to overcome. The social dimension of HIV/AIDS needs more attention of national programmes. With advancement in pharmaceutical sciences, the industry can produce more effective drugs for treating HIV/AIDS. HIV infected persons can now live longer. One day in the future HIV infection may become something like a chronic disease with which affected people may be able to live a longer life under extensive treatment. Only, the HIV-infected persons must be able to freely access effective drugs which should be made universally available at affordable cost,” Dr Samlee concluded.

Regional Conference on Revitalizing Primary Health Care

The Regional Conference on Revitalizing Primary Health Care was held in Jakarta, Indonesia from 6–8 August 2008. Delivering his opening remarks, Regional Director, Dr Samlee Plianbangchang said, “All of us are aware that this year is the thirtieth anniversary of the Alma-Ata Declaration on Primary Health Care (PHC). PHC, as we know, is the key to the attainment of the social goal of Health for All (HFA). The widening gap between “haves” and “have nots” in health has been a serious concern all over the world. It is the impediment preventing us from reaching this social goal, the goal of HFA. During the past 30 years, all countries around the world have attempted to close this gap — the gap between “haves” and “have nots” — by developing and implementing their national HFA/PHC strategies. Countries in the South-East Asia Region have been among the pioneers in the successful development and implementation of the PHC approach.”

Dr Samlee added, “In reality, many different forms of PHC exist throughout the world. What forms PHC will take depend on the ground reality in countries and on the interpretation of its concept by concerned parties and authorities. Nevertheless, experiences in implementation of PHC in countries over the past 30 years can provide very useful lessons, especially to development authorities and professionals. If properly developed and implemented, PHC can be a powerful tool for public health interventions — interventions that can help ensure reaching the unreached, as well as help ensure equity and social justice in health.”

Dr Samlee concluded, “At this important conference, let us once again reaffirm our unwavering determination and commitment to the attainment of the social goal of health for all through the PHC approach. Let us continue to advocate for more political commitment to the development of national health systems based on PHC. Let us continue our endeavours to ensure quality care and quality services organized and delivered through the PHC approach. WHO will continue to work tirelessly in supporting the efforts of Member States towards these ends.”

WHO spotlights health in South-East Asia

Health ministers from all 11 Member States of the WHO South-East Asia (SEA) Region and WHO experts will meet to discuss key health issues confronting the Region at the Regional Office on 8–9 September 2008.

The annual Meeting of the Health Ministers is a forum to exchange national experiences on the social, political and economic dimensions of health. The Health Ministers’ Meeting will be followed by the Sixty-first Session of the WHO Regional Committee for South-East Asia. The Regional Director, Dr Samlee Plianbangchang, will be present at both meetings. The Director-General of WHO, Dr Margaret Chan, will also attend. Some of the issues up for discussion at the Sixty-first Session of the Regional Committee for South-East Asia are: revitalizing primary health care; tobacco control; reduction of maternal and neonatal mortalities; responding to emerging and re-emerging borne diseases vector-borne diseases; public health approach to combating HIV-AIDS; and environment and health.
Dr Samlee re-nominated as Regional Director

The Sixty-first Session of the WHO Regional Committee for South-East Asia (8-11 September 2008) re-nominated Dr Samlee Plianbangchang as the Regional Director for a second term. Dr Samlee’s nomination will be submitted to the 124th Executive Board of WHO at its January 2009 session for ratification.

As Regional Director, Dr Samlee focused on building the capacity of Member countries to strengthen their national health programmes. During his first term, WHO set up the South-East Asia Regional Health Emergency Fund to provide immediate relief following a natural disaster.

Dr Samlee’s first term as Regional Director was marked by important initiatives such as the establishment of the South-East Asian Public Health Education Institutes’ Network (SEAPHEIN). He is an expert in international health planning and administration, including programme and project development; coordination and management; epidemiology and human ecology; and public health education and practice.

RC61 concludes

The Sixty-first Session of the Regional Committee for South-East Asia concluded on 11 September 2008. The Committee deliberated upon and adopted resolutions on several key issues. It upheld the principles of equity and social justice to provide benefits of health care to all people in their countries.

WHO was called upon to continue providing leadership in health through resource mobilization, research and technical guidance.

The Committee adopted six resolutions on: Nomination of Regional Director; Proposed Programme Budget 2010-2011; Revitalizing primary health care; Tobacco control; Dengue prevention and control; and Resolution of thanks.

The Committee reaffirmed the commitment made by Member States in the Alma-Ata Declaration to implement primary health care (PHC) by upholding the values of equity and social justice through adoption of principles of universal coverage, multisectoral collaboration, community participation and use of appropriate technology in health development. It expressed concern that progress towards achievement of the Millennium Development Goals (MDGs) varied from country to country and from goal to goal and depended largely on health systems.

The Committee was also concerned that inequity in health within and across countries was underpinned by social and economic determinants of health and noted that these determinants may further undermine achievements of the health-related MDGs.

It urged Member States to reaffirm their commitment to the PHC approach in strengthening health systems that were specific to the overall social, economic and political context for achieving health-related MDGs.

The Committee emphasized the importance of the six policy recommendations of the WHO MPOWER policy package: Monitor tobacco use and prevention policies; Protect people from tobacco smoke; Offer help to quit tobacco use; Warn about the dangers of tobacco; Enforce bans on tobacco advertising, promotion and sponsorship, and raise taxes on tobacco.

The Regional Committee also urged Member States to scale up their national tobacco control policies, legislation and enforcement, regulations, strategies and programmes in conformity with the WHO Framework Convention, in partnership with other relevant government sectors, civil society and nongovernmental organizations.
Publications corner

WHO Expert Committee on Specifications for Pharmaceutical Preparations
Forty-second Report; Technical Report Series
No 948, World Health Organization
ISBN-13 9789241209489
ISBN-10 9241209488
Order Number 11000948
Price CHF 30.00 / US$ 30.00
Developing countries: CHF 21.00

The Expert Committee on Specifications for Pharmaceutical Preparations works towards clear, independent and practical standards and guidelines for medicines' quality assurance. Standards are developed by the Committee through worldwide consultation and an international consensus-building process.

The international guidelines, specifications and nomenclature developed under the aegis of the Expert Committee on Specifications for Pharmaceutical Preparations serve all Member States, international organizations, United Nations agencies, regional and interregional harmonization efforts, and underpin important initiatives, including the prequalification of medicines, the Roll Back Malaria Programme, Stop TB, essential medicines and medicines for children. The advice and recommendations provided by this Expert Committee are intended to help national and regional authorities and procurement agencies, as well as major international bodies and institutions, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and international organizations such as the United Nations Children's Fund (UNICEF) to combat problems of counterfeit and substandard medicines and to fill the gap for medicines used in the treatment of large populations, for which no international quality requirements are publicly available.

Essential Environmental Health Standards for Health Care
Nonserial Publication
Adams, J., Bartram, J., Chartier, Y.
Order Number 11500712
Price CHF 15.00 / US$ 15.00
Developing countries: CHF 10.50

Health-care associated infections affect between 5% and 30% of patients. The associated burden of disease is extremely high, and is a significant drain on health-sector resources and households. Ensuring safe environmental health conditions in health care can reduce the transmission of health-care associated infections.

The interventions provide an educational opportunity to promote safe environments that are relevant to the population at large, and thereby also contribute to safe environments encountered at home. This is especially relevant to the trend towards increased home-based care, as witnessed in both the developing and developed countries.

This document provides guidance on essential environmental health standards.
required for health care in medium- and low-resource countries and support the development and implementation of national policies. These guidelines have been written for use by health managers and planners, architects, urban planners, water and sanitation staff, clinical and nursing staff, careers and other health-care providers, and health promoters.

**WHO Standard Acupuncture Point Locations in the Western Pacific Region**

*WPRO Nonserial Publication*

WHO Regional Office for the Western Pacific


Order Number 15200114

Price CHF 20.00 / US$ 20.00

Developing countries: CHF 14.00

Acupuncture has been practised for more than 2500 years in the Western Pacific Region and has become a global therapeutic method in recent decades. However, it was reported that acupuncturists differed by up to 25% in the acupuncture points they used, raising doubts and uncertainty regarding the efficacy and safety of acupuncture treatment, as well as causing difficulties in the fields of acupuncture research and education. Member States therefore increasingly began to demand standardization in acupuncture point locations. Responding to this request, the WHO Regional Office for the Western Pacific Region initiated a project to reach consensus on acupuncture point locations and thus convened 11 serial meetings resulting in these guidelines. The publication stipulates the methodology for locating acupuncture points on the surface of the human body, as well as the locations of 361 acupuncture points. It is applicable for teaching, research, clinical service, publication and academic exchanges involving acupuncture.

**Orientation on Harm Reduction. Three-hour Training Course**

*Participant Manual*

*WPRO Nonserial Publication*

WHO Regional Office for the Western Pacific


Order Number 15202113

Price CHF 10.00 / US$ 10.00

Developing countries: CHF 7.0

This training package has been produced for audiences unfamiliar with harm reduction for injecting drug users. It provides an introduction to important concepts in HIV prevention for injecting drug users. The package contains five training modules with slides that can be delivered separately or in one session. The modules cover the following topics: Introduction to drugs, HIV and harm reduction; outreach to injecting drug users; drug-dependency treatment; needle and syringe programmes and HIV prevention in prisons and closed settings.

The delivery of this training package should include opportunities for discussion and reflection of the information provided. Activities to facilitate this process have been included.

**Selection and Use of Essential Medicines**

*(The)*


*WHO Technical Report Series, No 950*

World Health Organization


Order Number 11000950

Price CHF 25.00 / US$ 25.00

Developing countries: CHF 17.50

This report presents the recommendations of the Sub-committee of the WHO Expert Committee responsible for the WHO Model
List of Essential Medicines. The task of this Sub-committee was to draw up the first WHO Model List of Essential Medicines for Children. The first part of the report contains a summary of the Committee’s considerations and justifications for the inclusion of particular medicines in the model list for children. Appendices to the main report include the first WHO Model List of Essential Medicines for Children, a list of all the items it contains sorted according to their 5-level Anatomical Therapeutic Chemical (ATC) classification codes, and a summary of medicines to be reviewed before the next meeting of the Sub-committee.

Health in Asia and the Pacific
Countries and areas of WHO's South-East Asia and Western Pacific regions share many problems, including inadequate resources for health and a high burden of disease. The differences and similarities that exist among the 37 countries and areas of the WHO Western Pacific Region and the 11 countries of the South-East Asia Region are more meaningful when viewed in the context of the larger Asia Pacific Region. This WHO publication is a response to requests from Member States for an information resource covering the entire Asia Pacific Region and containing up-to-date reports on health trends and health systems.

The Asia Pacific Region covers 21% of the world's land area and is home to 53% of the global population. The challenges in many areas of public health, such as equity, human resources, health promotion, health service delivery and the social determinants of health, cannot be adequately described by numbers alone. To tell these stories, this publication provides a narrative of many aspects of the current health situation in the Region, supported by the statistical data. Efforts to achieve better health for all, as well as the successes and the failures encountered, are covered in detail. Where possible, a comparative approach has been taken to underscore differences as well as similarities. This publication is aimed at a wide audience with the belief that national health authorities, policy-makers, scholars, researchers, health workers and others dedicated to the advancement of public health in the Asia Pacific Region will find it to be an invaluable resource, which provides evidence crucial for sound policies and decisions.

Health situation in the South-East Asia Region 2001–2007
WHO Regional Publication, South-East Asia Series, No. 46
The health situation in Member States of WHO's South-East Asia Region varies within and across countries. The Region accounts for around 25% of the world population yet it incurs 30% of the global disease burden. The Health Situation in the South-East Asia Region was first published in 1980 and the present volume is the eleventh in the series. This publication presents the health situation in the Member States, as reflected by epidemiological data, primarily covering the period 2001-2007. It is presented with a regional perspective and, where appropriate, comparisons have been made with other regions of WHO and with world averages. It describes the progress in health development and reflects the impact of health programmes, highlighting the need for concerted action to improve the health of the population of the region. Various professionals, policy-makers, authorities, researchers, health personnel and those committed to the advancement of public health in the Region will find this publication a valuable resource.
Guidelines for contributors

THE Regional Health Forum seeks to inform and to act as a platform for debate by health personnel including policy-makers, health administrators, health educators and health communicators.

Contributions on current events, issues, theories and activities in all aspects of health development are welcome. Contributions should be original and contain something of interest to those engaged in health policy and practice, some lesson to be learned, some idea, something that worked, something that didn't work, in fact anything that needs to be communicated and discussed on a broader scale. Articles, essays, notes, news and views across the spectrum of health development will be published.

Every year, the April issue of the Forum is dedicated to the World Health Day theme of the year. Readers may send contributions relating to the theme for inclusion in the special issue.

Papers for submission should be forwarded to the Editor, Regional Health Forum, World Health Organization, Regional Office for South-East Asia, World Health House, Indraprastha Estate, Mahatma Gandhi Road, New Delhi 110002, India (E-mail address: editor@searo.who.int).

Contributions should:
- be in English;
- be written in an anecdotal, informal, lively and readable style (so that sophisticated technologies, for example, may be easily understood);
- be in MS Word and sent on-line to editor@searo.who.int;
- not normally exceed 3 000 words with an abstract (approx. 250 words) and a maximum of 30 references.

Letters to the editor should normally be between 500-1000 words with a maximum of six references.

Responsibility of authors

Authors are responsible for:
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- obtaining permission to use copyrighted material (if used). The letter granting such permission should be attached to the manuscript when submitted;
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- ensuring that all abbreviations (if used) are explained;
• giving their full names, the name and address of their institutions, and an exact description of their posts;
• declaring sources of funding for the work undertaken, and
• disclosing at the time of submission, information on financial conflict of interest that may influence the manuscript. They may also choose to declare other interests that could influence the results of the study or the conclusions of the manuscript. Such information will be held in confidence while the paper is under review, and if the article is accepted for publication the editors will usually discuss with the authors the manner in which such information is to be communicated to the reader.

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• The use of tables and illustrations should be restricted to those that clarify points in the text.
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• Photographs should be on glossy paper, preferably in black and white.
• Each table should be submitted on a separate sheet of paper.

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