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From the Editor

Welcome to the 47th issue of the IMR Bulletin published at the year-end of 1998. Glancing through the bulletin, you may already have realised that this issue is a move away from the traditional presentation of bio-medical research papers from the Malaysian Institute for Medical Research. Issue No. 47 is dedicated to health systems research (HSR) papers and abstracts. It is also being produced by the Health Systems Research Division in the Institute of Public Health.

As many regular readers of the IMR Bulletin may be more familiar with the traditional biomedical research approach and format, I would like to take this opportunity to elaborate further about the HSR approach. Similarly, within this issue, the editorial board have included a invited piece on the Health Systems Research Division in the Public Health Institute as a World Health Organisation (WHO) Collaborating Centre for HSR and its activities in relation to the HSR programme in the Malaysian Ministry of Health (MOH). At the same time, the HSR Division is also trying to strengthen our network of HSR researchers. So I would like to warmly invite you to become a member of this HSR ‘family’. Details for membership are also included in this issue.

So what is HSR you may ask? HSR is research undertaken primarily to provide information to support decision-making that can improve the functioning of the health system. It focuses on priority problems in health care and is action-oriented, i.e. aimed at developing solutions. HSR requires an integrated multidisciplinary approach, i.e. research tackled from many disciplines because health is affected by the broader context of socio-economic development. The conduct of its research is participatory in nature, involving all parties concerned (from policy makers to community members) in all stages of the project. These studies should be scheduled in such a way that results will be available when needed for key decisions. The research must be timely i.e. done for a specific reason or use, and emphasis is placed on comparatively simple, short-term research designs that are likely to yield practical results relatively quickly.

More so in these times of economic bad weather, the principle of cost-effectiveness is important in the selection of research projects. Program management and operational research in HSR should focus, to a large extent, on low-cost studies that can be undertaken by management and service personnel in the course of daily activities. There is, of course in some instances, a need for some larger studies as well, such as the conduct of the Second National Health and Morbidity Survey in 1996. Large or small, results of any HSR should be presented in formats most useful to administrators, decision-makers, and the community. These reports normally include a clear presentation of results with a summary of the major findings adapted to the interests of the party being targeted by the report; an honest discussion of practical or methodological problems that could have affected the findings; and alternative courses of action or recommendations that could follow from the results and conclusion. Evaluation of the health system research undertaken should not just be by the number of papers published, but by its ability to influence policy, improve services, and ultimately lead to better health. Thus, an HSR project does not stop at finding answers to the questions posed, but includes an assessment of what decisions have been made based on the results of the study.

Because of the emphasis on the practicability of HSR and its usefulness to health managers and policy-makers, as mentioned above, often times publication takes second-stage and is given lower priority. Similarly, because many of these studies are collaborative in nature and conducted by managers themselves without input from full-time researchers, the depth and extent of the research methodology may still be rudimentary. The HSR programme in the MOH and the HSR Division, in particular, is attempting to address this shortcoming. Nevertheless, the importance of HSR and the value of the research conducted, warrant greater promotion and advertisement of HSR activities done thus far. So, for this issue of the IMR Bulletin, we have included 3 categories of writings. Full papers of previous HSR studies conducted by our local health personnel, abstracts of papers previously published in other journals and abstracts of unpublished studies, for which reports are nevertheless available and stored in the Public Health Institute library.
Last but not least, again I would like to use this forum to invite readers to be a part of our HSR network so we can further such research in Malaysia and also raise the quality and usefulness of such studies. Before I end, may I also take this opportunity to wish everyone the very best for 1999.

- The Editor

Network for HSR

As a WHO Collaborating Centre for Health Systems Research in the Western Pacific Region, the HSR Division, in the Public Health Institute, is strengthening links and increasing our networking to promote more HSR activities in the country and region.

Therefore, we most enthusiastically invite you to be a part of our HSR family by joining our network. With this network, we plan to keep each other informed of on-going HSR studies; future courses, seminar and workshops not to be missed; and open channels of communications between researcher, managers, health personnel and policy-makers. The network will serve as an address guide to HSR enthusiasts and activists, as we build our fraternity over time. We also want to provide members with an effective HSR registry of past and on-going research, as well as to expand the capacity of the Public Health Institute library as a good source for reports and articles on health systems research that have been conducted locally. With this network too, we are going ahead to develop further skills and expertise in HSR and other research methodology, to be fostered and nurtured amongst our network members. This will also help take the HSR programme in the Malaysian Ministry of Health to a new frontier of research and training through better collaboration and systematic planning, utilising the abundant and varied expertise in the country and region.

So sign-up today and be an active member of this win/win partnership in HSR.

Send us your details:
- Name
- Address
- Telephone number
- Facsimile number
- E-mail address
- Date of birth
- If any, previous training in HSR or any research methodology/statistical training
- If any, titles of previous research conducted or collaborated in
- If any, previous publications
- Your areas of interest

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INVITED ARTICLE
A Malaysian WHO Collaborating Centre for Health Systems Research

Rozita Halina H., Maimunah A.H.

Introduction

The Health Systems Research (HSR) Programme in the Ministry of Health (MOH) was initiated in the Fourth Malaysia Plan (1981-1985). This initiative was part of the larger plan to improve the effectiveness and efficiency of health services in the MOH. HSR was to provide the scientific information to facilitate health managers in making informed decisions when formulating policies; and in planning and executing programmes and activities. In 1988, because of the work and efforts achieved, the Health Systems Research Division in the Public Health Institute of MOH was given international recognition as a Collaborating Centre for HSR in the Western Pacific Region by the World Health Organisation (WHO).

Terms of Reference

As a WHO collaborating centre for more than two periods now, the HSR division's terms of reference are as follows:

1. To serve as the national co-ordinating body for the development of Health Systems Research.
2. To carry out relevant research, based on national priorities, and to propose and participate in multinational collaborating studies.
3. To provide training in Health Systems Research.
4. To support the integration of Health Systems Research into the managerial process, and to document the related experiences.
5. To provide technical support for institutionalising Health Systems Research.
6. To facilitate and provide access to bibliographical resources.
7. To transfer the above mentioned experiences and expertise at an inter-country/regional level.
8. To contribute to methodological development and synthesis in this area through participation in organisation of meetings, panels of experts and advisory groups.

Apart from its role as a WHO Collaborating Centre, and perhaps more importantly, the HSR Division serves as the hub for the MOH's HSR programme and functions to co-ordinate activities of HSR on a nation-wide basis through promotion, training, capacity-building, networking and collaborative research. As the success of this programme is dependent on the support of and close rapport with various levels of management in the MOH, the Division actively pursues collaboration with identified staff from State and Programme levels. Together these 'collaborators' function as co-researchers for research projects, facilitators for training activities, writers for publications and presenters in forums, seminars and conferences. Of late, Universities and other research institutions have also initiated their involvement in HSR activities, by including HSR methodology training into their syllabus as well as involving their faculty as co-researchers.

With the inclusion of HSR in the national priority areas for research through the mechanism of Intensification of Research in Priority Areas (IRPA), the support and push for more HSR activities have grown many folds. Research to support policy formulation and programme evaluation is among the main priority areas in health for the Seventh Malaysia Plan (1996-2000).

Activities of the HSR Division as a Collaborating Centre

To further the advancement of HSR activities in the country and region, the Centre's activities are numerous. These include the areas of training, research, consultancy, dissemination through publication and presentation and the production of other materials such as a CD-ROM for computer-assisted training in HSR.
1. Training activities

The HSR Programme aims at institutionalising health systems research as a management tool at national, state and institutional levels through various training strategies. Priority is given to the development of a critical mass of personnel capable of conducting and supporting HSR studies at a local level. This is done through training activities at all levels. Annually about 4 - 6 workshops on HSR Methodology are conducted. Therefore locally, more personnel in the MOH have been trained in HSR through these workshops and also in short courses. To increase the efficiency and accessibility of these training sessions, they are also decentralised to the zone or state level. Decentralisation also allows for a more active and 'hands-on' role in supporting young researchers in their research projects close to their own work place.

As the turnover of MOH staff and researchers in the country is rather quick, the HSR Division has to undertake continuous consensus building by creating awareness and better understanding of HSR at all levels of health personnel through briefing, seminars and newsletters. At the same time, the HSR concept and methodologies have also been integrated into the syllabus of many training institutions for health. These include input to the basic and post-basic nursing, health inspectors and health education officers' curriculum. The HSR approach has also been integrated into the Quality Assurance Programme (QAP) of the MOH. The Division also serves as a focal point for training in Quality Assurance (QA); and again, training emphasis is directed towards the building of a critical mass of personnel well versed in the concept of QA and able to contribute actively and effectively to the QAP.

As a WHO Collaborating Centre, the Health Systems Research Division in the Public Health Institute has played host to many Visiting Fellows and international visitors, senior Ministry of Health officials and students. Their interests generally cover a wide range of Public Health disciplines including Health Systems Research, its methodologies and its practise in Malaysia. Many have come specifically for Health Systems Research training and they include Fellows mainly from developing countries such as Bangladesh, Papua New Guinea, Mongolia and Laos PDR.

Some other international callers to the Centre have been visitors from Japan, Vietnam, Mongolia, Vanuatu and Singapore.

So strong is the support of the government and MOH towards strengthening research capacity and capabilities amongst health personnel, that numerous scholarships and fellowships for study tours have been awarded to interested health personnel. HSR division staffs have also benefited from the government's foresight in being able to go overseas for further and more specific training, particularly in the areas of health policy, health policy research and the measurements of health outcomes and quality measurement tools. It is hoped that in the near future, there will be more training support for the areas of Evidence-Based Practice, data management and statistics.

2. Research activities and dissemination of research findings

Health research in Malaysia can be traced back to the founding of the Institute for Medical Research (IMR) in Kuala Lumpur way back in 1901. Since then, many more institutions have become involved in the conduct of various types of research for health. The HSR Division in the Public Health Institute participates actively in the health systems research activities for the country, often times being commissioned to conduct studies at the request of the top managerial and policymaker level in the MOH. It also continues to promote, monitor and disseminate health systems research projects in Malaysia. To this end, the Collaborating Centre maintains a cumulative registry of HSR projects conducted in the country and endeavours to ensure that the findings of such studies are disseminated through seminars, workshops, conferences, reports on the research projects, bulletin and other publications.

3. Technical consultancy

Staff in the Centre provides technical consultancy to other organisations both locally and internationally. Similarly, the Division also acts to provide technical support for the QAP in the MOH and internationally.
Future Direction and Emphasis for the Collaborating Centre

The HSR Division will continue its role to promote and develop research skill in managers at various levels to enable them to conduct their own studies and/or utilise information from HSR studies effectively. This will augment the HSR Programme's aim at institutionalising the process of HSR as a management tool at national, state and institutional levels. This, in turn, will empower health managers with skills to better prioritise problems or areas requiring further research, as well as utilising HSR results appropriately in making management decisions. As managers realise the value of such information in providing evidence to their policy and management decisions, it is hoped that they will in turn provide the managerial support for future HSR activities, thus completing the cycle and strengthening the collaboration and networking efforts.

The future sees the Collaborating Centre involving more experienced researchers in the trainer's workshop and introducing computer-aided training programmes to strengthen training activities. The HSR Division with its multidisciplinary team also plans to further strengthen its capabilities in research for the country. Priority for participation in training activity for HSR, locally and abroad, is made available to the HSR Division staff. This enables them to better participate and conduct HSR studies and provide technical expertise and leadership, in an effort to push forward the research frontier as well as to upgrade the reputation of the Centre. Thus, the future direction of HSR will be focused on institutional strengthening concurrent with human resource development. Within the framework of National Institutes of Health (NIH), it is expected that the Health Systems Research activities will be further enhanced and that more HSR findings and recommendations will be utilised for decision-making in health policy and development issues, in concordance with the aims of Malaysia's Vision 2020.

In the short-term, the Centre will be consolidating and strengthening its capacity in some specific areas. These areas include health policy research and economic analysis; evidence-based practice in health policy and management, clinical medicine, and public health; health outcomes measurements; and research in and measurements of quality improvement.

To this end, discussions are underway with the Economic Development Unit of the World Bank and their regional partner institute in the University of Chulalongkorn in Thailand (yet another WHO Collaborating Centre - for Health Economics, in the South and East Asian Region), on the feasibility of conducting a course on "Health Sector Reform and Sustainable Financing" in Malaysia. Research in the areas of health economics currently being planned includes econometric modelling of the demand for health care in Malaysia and cost-effectiveness analysis (CEA). Apart from being the denominator for a CEA, other aspects of health outcomes research are also being proposed, such as Quality of Life Assessments. This will be done particularly in collaboration with the Clinical Research Centre and the QAP in the MOH.

A Centre staff member has been identified as a key person in the development of Evidence-Based Practise (EBP) in MOH. Therefore, it is envisaged that the HSR division will act as the secretariat to a MOH Evidence-Based Practise Advisory Committee. As the secretariat, its main activities will include training and consultancies in the application of EBP in MOH. It will also co-ordinate EBP activities of the different Focal Points in MOH to avoid duplication and to promote a coherent plan to this fledgling effort. The HSR division will also facilitate a system to source evidences through electronic linkages and other methods. EBP is a terminology that has been fairly newly introduced in Malaysia, even if the concept and application may not be alien. Local expertise in this field is still lacking. Immediate future emphasis will be on the development of a critical mass of trainers with the appropriate skills in non-statistical and statistical pooling of data or evidences and the critical appraisal of these evidences in providing information to support decision-making over issues of concern.

The HSR Division will still continue its role as a focal point for training in QA, and research and consultancy in quality improvement; emphasis for the near future will be on the development of skills in measurements for quality. The research activity will be closely linked with outcomes research.

Efforts to strengthen the promotion and further development of HSR among various categories of health staff will also be the emphasis
for the future. Targets groups that have been identified include allied health professionals. Initial effort have already been made to develop HSR research in nursing. The current consensus-building and capacity development activities will continue, as will the strengthening of the HSR network among nurse researchers.

The Centre is developing a computer-based training system in health systems research methodologies. This will be used for supplementary training and as a distant learning tool to enable more health managers and health workers to conduct and use HSR in their own working environment.
FULL ARTICLES
A study on the Oral Health Status of Trainee Teachers in the Teachers' Training Colleges in the State of Pahang

Normala M.R.¹, Su KL²

1 Pahang Health Department
2 Mentakab Dental Clinic

Abstract:

This study was conducted to find out the oral fitness status of the trainee teachers who would be entrusted to play a role in imparting oral health messages to school children. The objectives of the study were to assess the oral health conditions and treatment needs of the trainees. A total of 576 trainees participated in the study. Collection of data was by self-administered questionnaire and oral examination. Results showed that only 14.8% trainees were caries free (DMFX=0), the prevalence being 85.2% with a mean DMFX=4.15; 41.4% having tooth decay (D), 31.2% missing (M), 70.0% filled (F) and 15.7% indicated for extraction (X) each with a mean of D=0.79, M=0.57, F=2.55 and X=0.26; 62.0% having 28 functional teeth with a mean of 27.1 and 38% tooth mortality (M+X) with a mean of 0.84. Results using the CPITN index showed 11.9% of trainees were free of periodontal disease but 88.1% had some form of periodontal problems. About 7.7% had bleeding gums, 65.6% calculus, 14.3% pocketing 4-5mm and 0.5% pocketing >6mm. As many as 41.4% of trainees required fillings, 15.7% extraction, 87.6% scaling and prophylaxis, and 0.5% complex specialised treatment. About 88.1% needed oral hygiene instructions. Overall, 93.5% required some form of treatment. The caries trend may be declining but there is still a great need for treatment and oral health promotion. Of the trainees surveyed, 31.3% had not visited the dental clinic since they left school and 40.1% had their last dental visit before 1994. This factor probably contributed to the high treatment needs of the trainees. It is recommended that the trainees are categorised into a priority adult captive group and be given the concept of incremental dental care along with the existing dental health education module being carried out yearly. This could help in the enforcement of oral health messages and promote good personal oral hygiene. It is hoped that teachers with good oral health could play a better role as teacher/mentor to the school children in dissemination of positive oral health messages and habits.

Introduction:

A Dental Health Education (DHE) Programme, jointly organised by the Dental and Education Departments, has been carried out since 1990 for the fourth semester trainees in Maktab Perguruan Teruntum and Maktab Perguruan Tengku Afzan, both in Kuantan, Pahang. The DHE activities include talks, an exhibition and a workshop on the preparation of teaching modules. The ultimate objective of the programme is to encourage teachers upon graduation to disseminate oral health information with special emphasis on the enforcement of oral hygiene habits for the school children by organising daily tooth brushing after recess in schools. However, at present in Pahang less than ten primary schools participate in daily tooth brushing and this number has not been increasing. This study is under out if the oral health status of trainee teachers contributes to the poor follow-up and follow-through of oral health messages by them upon graduation. No such study has ever been carried out in Pahang on this captive adult group and it is timely to do so and obtain baseline data for future planning.

Literature Review:

Several studies have been done on the oral health status of school children in Malaysia since 1970, providing sufficient information about the oral health status of this population (1-5). In 1990, an epidemiological survey carried out to determine the oral health status of adults in Malaysia found that the prevalence of caries in 15-19 year olds was still high (86%) while those without periodontal disease was only 16% (6). In recent years, dental caries has been reported to be decreasing (7). Periodontal status of secondary school children in Malaysia (16 year olds) is also comparable to those found in some other countries (8). Most secondary school children receive some form of dental
treatment under the Ministry of Health's dental programme. But on leaving the secondary school system, they do not receive any organised dental care and there is also sparse information concerning their oral health status.

**Objectives:**

The main objective of this study is to assess the oral health conditions and treatment needs of the trainee teachers and specifically on the dental caries status, periodontal status, treatment needs and recommend strategies for future planning for this group.

**Methodology:**

This is a descriptive, cross-sectional study on the oral health status of trainee teachers. The two colleges in Pahang formed the sampling frame and all trainees in the 2nd semester formed the sampling unit. A total of 576 trainees participated in the study, which formed 47.8% of the total enrolment of 1204 trainees in the two colleges. Data collection was by self-administered questionnaires and oral examinations. The survey form and the examination criteria were based on criteria set out by WHO (9) and modified to suit the needs of this study.

Inter and intra-examiner calibration was carried out to eliminate or minimise examiner variability. A pretest survey was done to familiarise the examiners with the criteria and requirements of the survey form. Twelve students were examined for this purpose and 90% conformity was achieved. Recorders were briefed on the survey criteria in order to familiarise themselves with the coding system and method of recording.

The examiners consisted of three dental officers and three dental public health specialists including the investigators. A recorder (dental surgery assistant) assisted each examiner. Oral examination was facilitated by the use of a portable chair, a Waldmann portable operating light and a plane mouth mirror no.3.

Examination was by visual inspection. The probe was only utilised to remove food debris. All subjects wearing dentures had to remove their dentures. Those wearing fixed appliances were excluded. When in doubt as to the presence or absence of diseases or conditions, it was recorded as absent. Third permanent molars were excluded in the examination to eliminate variation.

In recording periodontal status, an index tooth was probed using the WHO 621 (CPITN-E) periodontal probe. A tooth was probed in the same plane as its long axis. A tooth was probed to determine pocket depth, to detect calculus and bleeding response. A sensing force was used to determine pocket depth and subgingival calculus. The index tooth or its substitute was examined sextant by sextant. Probing was done on at least six points around the tooth at mesio-buccal, mid-buccal, disto-buccal, disto-lingual, mid-lingual and mesio-lingual points.

Data was collected and analysed using EPI INFO 6.

**Findings:**

Three of the 576 sample subjects were excluded due to faulty entry of questionnaires. The sample size (n=573) constituted 47.6% of total population of trainees of both colleges in Pahang. Table I shows the age distribution of the trainees, the majority being in the age range of 18-21 years old with a mean age of 21.02 years old (SD = 2.74). About 70.2% were females (n=402) and 29.8% males (n=171). Majority of them were Malays (79.2%) followed by Indians (13.6%), Chinese (6.8%) and others (0.4%). A large proportion of them originated from the East Coast states, namely Kelantan (23.2%), Pahang (21.3%) and Trengganu (16.4%). About 48% completed their Form Five education and 52% Form Six.

**Table 1: Age distribution of trainees**

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<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>28</th>
<th>29</th>
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</tr>
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<td>No. of trainee</td>
<td>118</td>
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<td>109</td>
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<td>25</td>
<td>17</td>
<td>11</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>573</td>
</tr>
<tr>
<td>%</td>
<td>20.6</td>
<td>12.0</td>
<td>19.0</td>
<td>14.7</td>
<td>9.4</td>
<td>7.0</td>
<td>4.9</td>
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<td>3.0</td>
<td>1.9</td>
<td>0.9</td>
<td>1.2</td>
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</tr>
</tbody>
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Dental Caries Status

Only 14.8% of trainees were found to be caries-free (DMFX=O). Prevalence of caries was 85.2% with mean DMFX=4.15 (SD=3.55). Fig. 1 shows that 41.4% trainees had decayed teeth (D), 31.2% missing teeth (M), 70.0% filled (F) and 15.7% teeth indicated for extraction (X) with a mean D=0.80 (SD=1.32), M=0.57 (SD=1.11), F=2.55 (SD=2.74) and X=0.27 (SD=0.76). About 38.0% of trainees experienced tooth mortality (M + X) with a mean of 0.84 (SD=1.51). Majority (62.0%) of trainees had full 28 functional teeth with a mean of 27.16 (SD=1.50).

Periodontal Status

Only 11.9% trainees had healthy periodontal tissues. Majority (88.1%) had some form of periodontal problems of which 7.7% had bleeding gum, 65.6% had calculus, 14.3% had periodontal pocketing of 4-5mm deep and 0.5% had periodontal pocket formation up to >6mm deep.

Treatment Needs

Fig. 2 shows 41.4% of trainees required fillings, 15.7% extraction and 88.1% periodontal treatment. Amongst those who required peri-
odontal treatment, 87.6% required scaling and prophylaxis and 0.5% of trainees required complex specialised periodontal treatment.

Previous Dental Experience

Most (99.3%) trainees indicated they had experience of dental treatment out of which 66.5% had treatment when they were in school. As many as 31.3% had dental treatment entirely when schooling and had never visited any dental clinic since they left school and 40.1% trainees had their last dental visit before 1994.

Previous DHE Exposure

About 86.2% trainees said they had already previous knowledge on oral health care, of which 89.5% said they had attended DHE talks in school.

Discussion:

It was observed that majority of the trainees were Malays originating from the East Coast states of Kelantan, Pahang and Trengganu. The study shows a declining trend in dental caries as compared with the 15-19 age group in the adult survey study in Malaysia in 1990. The caries free group (DMFX=0) amongst the trainees was 14.8% as compared to 13.9% in the adult survey study. The caries prevalence was 85.2% and the mean DMFX was 4.15 as compared to 86.1% and 4.62 respectively. This trend is also seen in the mean D, M, X and M+X (tooth mortality) component which was D=0.79, M=0.57, X=0.26 and M+X=0.84 as compared to D=1.61, M=0.73, X=0.52 and M+X=1.3 in the 15-19 age group of the 1990 adult survey. The mean F component shows an increasing trend of F=2.55 as compared to 1.75. This would indicate an increase in the provision of conservative treatment. About 66.5% of trainees had previous dental experience in the school. This would indicate that most of the treatment must have come from incremental dental care in the school. This is a positive trend, which helps in the reduction of tooth mortality (M+X).

Trainees with healthy periodontal tissues were 11.9% as compared to 16.0% in the 15-19 age group of the 1990 adult survey. This shows a declining trend in periodontal health. Eighty-eight percent had periodontal problems ranging from 65.5% having calculus, 7.7% gum bleeding, 14.3% shallow pocketing of 4-5mm and 0.5% deep pocketing of >6mm as compared to the 1990 adult survey findings of 84.0% periodontal prevalence with 68.5% having calculus, 10.4% gum bleeding; 3.9% shallow pocketing of 4-5mm and 0.3% deep pocketing >6mm respectively. Effectiveness of dental health education did not seem to be positively reflected from the periodontal status of the trainees even though 86.2% indicated they had previous knowledge of oral health information. In fact, 89.5% said they had attended DHE talks in school. The high percentage of those with pocketing shows the neglect of oral hygiene amongst the trainees.

Treatment needs are high amongst the trainees. Even though there was a decline in caries experience but the need for treatment is still considerably high with 41.4% needing fillings and 15.7% extraction. Periodontal treatment needs are higher where 81.6% of those having calculus and periodontal pocketing of 4-5mm may require scaling ranging from simple prophylaxis to extensive scaling and curettage. Another 0.5% require specialised treatment for rehabilitation of the periodontal tissues. Oral hygiene instructions, for the promotion of oral health, have to be given to 88.1% of those having some form or other periodontal problems. Individual attention is necessary in high-risk cases.

It appears that the DHE given by the dental team once a year in the incremental dental care programme in school is not sufficient to instil strong dental awareness amongst school children. As soon as these children leave the school system, their oral health care seems to be neglected. The incremental dental care programme in school may actually cause the children to become complacent where oral health is concerned when they become adults. They do not seek dental treatment once a year as they have been advised. About 40.1% of trainees had their last dental visit before 1994 that is more than 3 years ago and 31.3% had their dental treatment solely in school. It appears that the once-a-year talk and tooth-brushing drill is not sufficient to make a major change in the attitude and habits of people. Reinforcement by inculcating daily oral hygiene habits starting with the young age group would be necessary. For this reason, daily tooth-brushing drill is recommended in primary schools. In the DHE module, trainee teachers are taught and trained on the know-how of the technique of tooth-brushing activi-
ty. Unfortunately, this activity is not practised in most schools.

**Recommendations:**

1. There should be an organised extended dental care similar to dental incremental care to these captive adult groups with high treatment needs. Since we rely on the teachers to help in the improvement of oral health status of the school children with their expertise in teaching and organising group activities, it would be only appropriate for the dental authorities to ensure that these trainee teachers are orally fit first. Thus, short-term planning would be to consider an additional activity in the present DHE module whereby oral examination and treatment would be given to the final year students (4th semester) and to render them orally fit before they leave the college and become teachers.

2. There should be a better collaboration between the dental and education authority at ministry level so that a joint policy could be formulated to ensure that DHE activities would be implemented by schools and incorporated in the health subject. This policy should be circulated to schools and understood by the school authorities and all teachers so that efforts made by the dental department to train the trainees with the DHE modules are not all wasted because of poor support from the school.

3. For long-term planning, there should be a static dental clinic in the teachers' training colleges to take care of the oral health needs of the trainees.

**Acknowledgement:**

We wish to thank Dr. Wan Mohamad Nasir bin Wan Othman for the invaluable guidance, Mr. Wong Sai Peng for making this analysis possible, and Dr. Leong Wing Kean for the encouragement and support. We also thank the examiners and all dental staff involved directly in the study.

**References:**


"Door-to-needle" infusion time for streptokinase patients with acute myocardial infarction

N. Nevedita, How LG

Abstract:

Thrombolytic therapy is important in reducing the morbidity and mortality in patients with acute myocardial infarction if administered within 6 hours of onset of illness. This study was intended to determine the time taken for patients with AM1 to receive streptokinase in Hospital Muar and to identify factors contributing to delayed streptokinase administration so as to enable planning of remedial action to minimize the delay.

A total of 78 AM1 patients were treated with streptokinase in Hospital Muar from January 1995 to October 1997. These patients were divided into 3 groups according to the mode of admission to CCU.

Taking the standard "door-to-needle" infusion time for streptokinase to be 45 minutes, the study result showed that only 3 patients (3.85%) received streptokinase within the standard time. The average time taken was 1 hour and 45 minutes. Factors contributing to delayed streptokinase administration include incompatibility to immediate streptokinase administration, delayed decision on streptokinase therapy, time taken to prepare streptokinase infusion, time taken to transfer patients from the general medical ward to CCU, delayed diagnosis and management at the A&E level and delayed review of patients by the medical officers on call.

With the identification of these factors, the medical department is implementing remedial actions to rectify the problem of delayed streptokinase administration.

Introduction:

Thrombolytic therapy has been proven to improve the morbidity and mortality in patients with acute myocardial infarction (AMI) especially if administered within 6 hours of onset. The sooner the thrombolytic is given the more myocardium can be salvaged leading to reduction in other infarction-associated problems such as arrhythmia, cardiac failure and death. Therefore, every effort should be made to ensure that thrombolytic therapy could be instituted as soon as possible in patients with AMI.

In Hospital Muar, most of the patients with AMI are first attended to at the Accident and Emergency (A&E) department. If a diagnosis of AMI was made, the patients will usually be admitted directly to the Cardiac Care Unit (CCU) which is located at a distance of 200 m from the A&E and necessitates transportation by ambulance. If the diagnosis of AMI was not made at the A&E, the patients are usually admitted to the general medical wards which are also located at a distance of about 200 m away by wheelchair or stretcher. The medical block in Hospital Muar is a 4-storey building and the acute beds are located on the first and second floors. When a diagnosis of AMI was made in the medical block, patient has to be transported by ambulance to CCU located 400 m away.

Objectives:

The general objective of this study was to identify factors contributing to delayed streptokinase administration in patients with AMI in Hospital Muar so as to enable planning of remedial action in order to minimise such delays.

Specific objectives include:

- to verify the magnitude of delayed streptokinase administration in patients with AMI in Hospital Muar

- to document the exact time taken and sequence of event from the initial presentation of the patient to the initiation of streptokinase infusion.
Methodology:

All AMI patients who received streptokinase in Hospital Muar from January 1995 to October 1997 were included in the study. The exact time for each sequence of events was accurately documented from the initial presentation of the patients to the initiation of streptokinase infusion as shown in the attached data sheet. The time interval between each sequence of events was obtained. The total time interval in each station namely A&E department, medical ward and CCU were then calculated and the "door-to-needle" infusion time for streptokinase were obtained.

The "door-to-needle" infusion time for streptokinase for new patients is defined as the time taken from arrival of patient to the A&E department to the time when streptokinase infusion

The "door-to-needle", infusion time for streptokinase for in - patients is defined as the time when diagnosis was made to time when streptokinase was infused.

The patients were categorised into 3 main groups:

Group I: Patients who were diagnosed in the A&E or the Outpatient Department (OPD) and admitted directly to CCU.

Group II: Patients who were diagnosed in the A&E or OPD and admitted to the general medical ward then transferred to CCU.

Group III: Patients who were admitted directly to CCU thus by passing the A&E (such as referrals from other hospitals)

The results were grouped and tabulated into 2 main groups namely those within the standard time and those who exceeded the standard time. The accepted standard "door-to-needle" infusion time for streptokinase (SK) is 45 minutes.

Findings:

Survey period: January 1995 to October 1997
Total no. of patients: 78

No. of patients who received SK within 45 min: 3 (3.85 %)
No. of patients who received SK after 45 min: 75 (96.15 %)

Table 1. Composite picture of patients in included in this study according to source and time taken for SK infusion

<table>
<thead>
<tr>
<th>Pt. group*</th>
<th>No. of pt.</th>
<th>SK within 45 min. (%)</th>
<th>SK after 45 min. (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>16</td>
<td>3 (18.25)</td>
<td>13 (81.25%)</td>
<td>16</td>
</tr>
<tr>
<td>II</td>
<td>60</td>
<td>0</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>III</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>78 (100)</td>
<td>3 (3.85)</td>
<td>75 (96.15)</td>
<td>78</td>
</tr>
</tbody>
</table>

* Group I : Patients who were diagnosed in the A&E and admitted directly to CCU

Group II : Patients who were diagnosed in the A&E and admitted to the general medical ward then transferred to CCU

Group III : Patients who were admitted directly to CCU bypassing the A&E (referred from other hospitals)
A detailed breakdown of timing for each sequence of events, from the initial presentation of the patients to the initiation of SK infusion, is presented below.

1. Time taken in the A&E department

   Time allocated: 5 min
   Range of time taken: 5 min to 45 min.
   Average time taken: 17.11 min/ patient

   No. of patients managed within allocated time: 5 (6.58 %)
   No. of patients exceeding allocated time: 71 (93.42 %)
   NB. 2 patients were admitted directly to CCU bypassing A&E

2. Time taken to transfer patients from A&E to general medical ward

   Time taken allocated: 5 min
   Range of time taken: 5 min to 35 min
   Average time taken: 10.95

   No. of patients managed within allocated time: 17 (22.37 %)
   No. of patients exceeding allocated time: 59 (77.63 %)

3. Time taken by nurse to inform doctor

   Time allocated: 5 min
   Time taken: All patients seen within 5 min. No. of patients seen within allocated time: 78 (100 %)

4. Time taken for house officer to see patient

   Time allocated: 5 min
   Average time taken: 2.5 min
   No. of patients seen within allocated time: 79 (99.62 %)
   No. of patients exceeding allocated time: 4 (6.35 %)

   NB. 15 patients were seen directly by the medical officers

5. Time taken for medical officer to review patient

   Time allocated: 5 min
   Range of time: immediate to 70 min
   Average time taken: 15.65 min

   No. of patients reviewed within allocated time: 26 (33.33 %)
   No. of patients exceeding allocated time: 52 (66.67 %)

6. Time taken to prepare patients for transfer out to CCU

   Time allocated: 5 min
   Range of time taken: 5 min to 65 min
   Average time taken: 8.69 min

   No. of patients managed within allocated time: 32 (53.45 %)
   NB. 1 patient took 65 min because there was no bed available in CCU

7. Waiting time for ambulance

   Allocated time: 5 min
   Range of time taken: 5 min to 40 min
   Average time taken: 13.28 min

   No. of patients managed within allocated time: 5 (8.33 %)
   No. of patients exceeding allocated time: 55 (91.67 %)

   NB. As long as 40 min was taken because no ambulance was available

8. Travelling time from ward to CCU

   Time allocated: 5 min
   Range of time taken: 5 min to 18 min
   Average time taken: 10.15 min

   No. of patients managed within allocated time: 6 (10 %)
   No. of patients exceeding allocated time: 54 (90 %)

9. Time taken for CCU staff to initiate SK infusion

   Time allocated: 5 min
   Range of time taken: 5 min to 7 hours 45 min
   Average time taken: 33.44 min

   No. of patients managed within allocated time: 9 (11.54 %)
   No. of patients exceeding allocated time: 69 (88.45 %)
NB. Some unstable patients took a long time to be stabilised prior to SK administration

10. Total time taken from presentation of patient to initiation of SK infusion

Time allocated: 45 min
Range of time taken: 5 min to 8 hours 45 min
Average time taken: 1 hour 49.97 min

No. of patients managed within allocated time: 3 (3.83 %)
No. of patients exceeding allocated time: 75 (96.1 %)

**Discussion:**

This study showed the magnitude of delayed SK administration in patients with AMI admitted to Hospital Muar was huge. Only 3.85 % of the patients received SK within 45 min of presentation. In addition, the degree of delay was also alarming. The average time for a patient with AMI to receive SK was 1 hour 45 min.

Significant delays were noted in each sequence of events except 2 areas. These were namely in the time taken for the nurse to inform doctor (100 % within allocated time) and the time taken for the House Officer to see patient (93.56 % within allocated time).

The longest delay appeared to occur after the arrival of patient to the CCU till the initiation of SK infusion. The average time taken then was 33.44 min (allocated time 5 min.)

The following factors were noted to contribute to the delay.

1. The patient's condition was unstable and thus precluded immediate for SK administration, e.g. blood pressure too high or too low. This factor was not avoidable. The remedial action would be to stabilise the patient as soon as possible, so that SK could be commenced as early as possible.

2. The Medical Officers were undecided about instituting SK infusion. The Medical Officers need to be well-versed with ECG interpretation and indications and contraindications of SK in order to make prompt decisions and make early consultation to specialists when in doubt.

The Specialist needs to supervise SK therapy from time to time and be readily available for consultation.

3. A relatively long time was taken to prepare SK infusion. The remedial action is to inform the CCU staff to make the SK available as soon as the decision for infusion made.

The second longest delay was in the transfer of patient from the general medical ward to the CCU. Preparation of patient, waiting time for the ambulance and travelling time to the CCU took an average of 33.10 min per patient.

The way to minimise this is to admit the patient directly from the A&E to CCU. A number of prerequisites have to be in place in order for this to be possible.

a. The A&E medical officer (MO) needs to be well-versed with the diagnosis of AMI.

b. The medical MO needs to be readily contactable and available to review patients in the A&E.

c. The A&E needs to have adequate monitoring facilities so that patient care is not compromised while waiting for the ambulance to send the patients to CCU. The ambulance service must be informed to give priority to transfer of AMI patients.

If the patient needs to be admitted to the general ward first, for example in a situation where no ICU bed was available, then the general ward will need to have adequate staffing and the proper monitoring system for the initiation of SK infusion. The lifts in the medical block were not functioning during the period of study causing further problems in transporting patients. These lifts need to be repaired in order to facilitate transport of patients to and from the general medical ward.

Significant delays were also noted in the A&E where the medical officer took an average of 17.11 min. to manage the patient. Some possible ways to minimise this include the following.

1. Update the A&E medical officers so that they are well-versed in the diagnosis of AMI to be able to make the diagnosis promptly.
2. The A&E medical officers must be readily available to review the patients.

3. The A&E medical officers need to be reminded to give due priority to patients with AMI.

Time taken for the medical MO to review the patients, to confirm the diagnosis of AMI and in turn to order for SK, was noted to be the 4th significant bottleneck. Average time taken was 15.65 min with a range of immediate review to be as long as 1 hour 45 min. The main contributing factor was that the medical officers were engaged in other life-threatening emergencies. To minimise this delay the medical MO need to make sure that due priority is given to patients with AMI. In situations where he or she is not immediately available, the MO must at least obtain details of the patient's history and physical signs from the house officer (HO) and review the ECG, with a view to instruct the HO to carry out the necessary treatment including initiation of SK. The medical officer should then review the patient as soon as the other emergencies were settled.

Recommendations:

1. Stabilise the patient as soon as possible with a view to rapid initiation of SK infusion.

2. Prompt review by HOs and MOs with immediate consultation when in doubt.

3. Continuous Medical Education (CMEs) and updating on the diagnosis of AMI, ECG interpretation, and indications and contra-indications of SK infusions.

4. Direct admission of patient to CCU from the A&E, and informing the CCU staff early once the decision to institute SK infusion is made.

5. Optimise staffing and patient monitoring facilities at A&E and medical wards to enable early initiation of SK.

6. Improvement of ambulance service with appropriate priority given to AMI patients.
Therapeutic Drug Monitoring - A study on sampling time

Zaidi A.

1 Seremban Hospital

Introduction:

There are various reasons for Therapeutic Drug Monitoring (TDM) service; the common reasons are therapeutic confirmation, suspected toxicity, checking patient compliance and when there is no therapeutic response observed. Among the common drugs requiring TDM services are antiepileptics (e.g. carbamazepine, phenytoin, valproic acid, phenobarbitone) digoxin, gentamicin, amikacin, and paracetamol.

It has been demonstrated that the intensity of the pharmacological action of many drugs correlates better with the serum concentration than the dosage. However, serum concentration varies amongst patients depending on their compliance, correct medication, absorption, distribution, biotransformation and excretion of the drug in question.

From studies and trials made by company discovering a particular drug, therapeutic ranges are established to assist in interpreting the serum drug measurement. However, the ranges vary throughout literature, so it should only be used as a general guideline. For example, a patient with chronic treatment might develop tolerance to certain drug; in this case the upper limit of the therapeutic range might be raised. Other than that, therapeutic range of a certain drug may also be changed when other drugs with synergistic or antagonistic action are administered concurrently. A classic example for this is carbamazepine; its therapeutic range is almost halved when administered with other antiepileptic drugs.

The main clinical indications for measuring drug's serum concentration are therapeutic confirmation and/or suspected toxicity. By determining the serum drug concentration, a clinician can identify whether therapeutic failure is due to the patient non-compliance.

Accurate and precise timing both in administering the drug and obtaining each blood sample is of utmost importance in therapeutic drug monitoring. For meaningful interpretation, it is essential to know when the plasma (blood) sample was obtained in relation to the last drug dose administered and time of initiation of the drug regimen. In addition, the sample should also be taken at steady state that is once the patient has started the treatment with a constant dose for at least 4 half-lives of the drug in question. If the level wanted is at trough level, the sample should be taken immediately before a dose. If the level wanted is the peak level then the sample should be taken at the specified time for the drug in question. If the sample is obtained at the wrong time, a large error in the estimation of serum concentration can occur.

For some drugs, for example phenytoin and phenobarbitone, the time at which the blood sample is taken is generally not critical. However, for practical purposes, it is better to take the blood sample at a pre-specified time that is at trough level or immediately before a dose. For drugs with narrow therapeutic range and relatively short half-life such as theophylline, antiarrhythmic drugs and aminoglycoside antibiotics, it may be necessary to take blood samples both at time of peak and trough serum concentration, especially when establishing the suitability of a chosen dose. Sometimes, for practical purposes, trough level is enough for TDM. This is due to the fact that trough level is less likely to be influenced by absorption or distribution problems, for example when monitoring level of theophylline oral dose.

Objective:

To evaluate the sampling time of TDM service requested in Hospital Seremban. This study will look into the percentage of correct sampling time or TDM services requested by units (disciplines) and also the percentage for inpatients and outpatients.
Methodology:

This was a retrospective study of TDM sampling time from January to June 1997. All the data were taken from the TDM form. The cases were classified according to sampling time, units, whether outpatient or inpatient and disciplines. Percentages were calculated and all the data were tabulated as in Table 1.

Findings:

Total cases = 168 (151 cases from Hospital Seremban, 17 cases from other hospitals)
Correct sampling time = 68 cases (40.5%)
Incorrect sampling time = 53 cases (31.5%)
Not stating the sampling time = 47 cases (28.0%)

Out Patient = 72 cases
Correct sampling time = 40 cases (50.6%)
In patient = 79 cases
Correct sampling time = 19 cases (26.4%)
Other hospital = 17 cases
Correct sampling time = 7 cases (41.2%)

As can be seen from the table, the evaluation of the sampling time is classified into 3 classes; firstly - for correct sampling time, secondly for incorrect sampling time and finally for not stating sampling time at all. This is classed according to Hospital Seremban TDM format, in which the clinician should include the sampling time (also the time of the last dose and the date treatment was started). Only around 40% of the TDM sampling have been done correctly. This mean the pharmacist interpretation of the blood level is only meaningful for 40% of cases when sampling time is correct. On the other hand, about 30% of the cases had not been sampled at the correct time, while for the remaining 29%, the status is unknown.

Table 1: Study results

<table>
<thead>
<tr>
<th>Cases according to discipline/unit</th>
<th>Correct</th>
<th>%</th>
<th>Incorrect</th>
<th>%</th>
<th>Not stated</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medical (n=69)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward 6A</td>
<td>6 cases</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>Ward 6B</td>
<td>14 cases</td>
<td>7</td>
<td>50</td>
<td>3</td>
<td>21.4</td>
<td>4</td>
</tr>
<tr>
<td>Ward 7A</td>
<td>5 cases</td>
<td>4</td>
<td>80</td>
<td>1</td>
<td>20.0</td>
<td>0</td>
</tr>
<tr>
<td>Ward 7B</td>
<td>10 cases</td>
<td>5</td>
<td>50</td>
<td>3</td>
<td>30.0</td>
<td>2</td>
</tr>
<tr>
<td>Ward 3Med</td>
<td>4 cases</td>
<td>2</td>
<td>50</td>
<td>10</td>
<td>25.0</td>
<td>1</td>
</tr>
<tr>
<td>*MOPD</td>
<td>30 cases</td>
<td>10</td>
<td>33.3</td>
<td>10</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td><strong>Paediatrics (46 cases)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward 6C</td>
<td>15 cases</td>
<td>7</td>
<td>46.6</td>
<td>1</td>
<td>26.6</td>
<td>4</td>
</tr>
<tr>
<td>Ward 6D</td>
<td>6 cases</td>
<td>4</td>
<td>66.6</td>
<td>12</td>
<td>16.6</td>
<td>1</td>
</tr>
<tr>
<td>*PcdClinic</td>
<td>25 cases</td>
<td>4</td>
<td>16.0</td>
<td>9</td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td><strong>Mix (6 cases)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward 7C</td>
<td>5 cases</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>20.0</td>
<td>4</td>
</tr>
<tr>
<td>Ward 5B</td>
<td>1 case</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Obstetrics &amp; Gynae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*O&amp;G Clinic</td>
<td>7 cases</td>
<td>2</td>
<td>28.6</td>
<td>3</td>
<td>42.8</td>
<td>2</td>
</tr>
<tr>
<td>*Psychiatric</td>
<td>1 case</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*Haemodialysis Unit</td>
<td>9 cases</td>
<td>4</td>
<td>44.4</td>
<td>3</td>
<td>33.3</td>
<td>2</td>
</tr>
<tr>
<td>Intcnsvc Care Unit</td>
<td>10 cases</td>
<td>9</td>
<td>69.2</td>
<td>1</td>
<td>7.7</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>17 cases</td>
<td>7</td>
<td>41.2</td>
<td>6</td>
<td>35.3</td>
<td>4</td>
</tr>
</tbody>
</table>

* Outpatient
MOPD = Medical Outpatient Department
From table 1, MOPD had the highest number of cases i.e. 30 cases, and yet only one third of the cases were with correct sampling times. The second highest number of cases was paediatric clinic with 23 cases, but only 4 of the cases had been done correctly. On the contrary, ICU had shown quite a good compliance in the sampling time with 69.2% i.e. the third highest after psychiatric unit (only 1 case from this unit) and ward 7A.

Discussion:

If the cases were divided into two groups, as shown in the graph above, inpatient cases account for 79 cases, while outpatient accounts for 72. For inpatient cases, 40 out of 79 cases had correct sampling time and that account for 50.6%. Comparatively, outpatient had only 19 (26.4%) correct sampling time out of 72 cases. Inpatient cases seem to have higher rate of correct sampling time than the outpatient cases. One possible reason may be the ready availability of medical staff to take blood sample from the patient once the time of sampling is achieved. On the other hand, sampling at the right time for outpatients may be difficult as the patients may have taken their medication at home before coming to hospital. If the sample has to be taken immediately before a dose, in case of twice daily dose, the sample should be taken 11 - 12 hours after the last dose, while in the case of three times daily doses, the sample should be taken about 8 hours after the last dose. This may not be practicable as the patients may have to wait for some time to have their blood taken.

Conclusion:

As mentioned before, sampling time is the utmost importance measure in TDM, in order to make a meaningful interpretation and suggestion or comment. So, in Seremban Hospital around 60% of the TDM cases had not been done appropriately. Outpatient cases seem to have lower rate of correct sampling time than the inpatient cases. This may contribute to the wastage of money, time, other resources and the patient's blood. not to mention inappropriate patient management.

Recommendations:

To increase the number of correct sampling time, for outpatient cases, they may have to be admitted for at least 12 hours, so that their blood sample can be taken at the correct time by the medical staff such as doctor or nurse. This may not be practicable as patients have to stay in only for their blood to be taken.

Alternatively, patient's appointment time may be fixed a little earlier than their sampling time. The time of appointment can be adjusted according to the patient's dosage regimen.

Another possible method to improve sampling time is to redesign the present TDM form. The column of the sampling time can be highlighted to show that it is important. The current TDM form may be confusing to the medical staff concerning when to take the sample for TDM.

Medical staff should be given Continuous Medical Education (CMEs) on the importance of accurate sampling time in TDM, through ongoing clinical talks or seminars concerning therapeutic drug monitoring.
ABSTRACTS OF PREVIOUSLY PUBLISHED ARTICLES
Introduction:

Unlinked anonymous screening is the most widely used method for obtaining community data on the prevalence of HIV. A major challenge of this method is the need to identify an existing mechanism that collects the blood of such individuals for a legitimate purpose and at the same time enable its utilisation for HIV testing. This study is one such attempt using cord blood samples collected in a pilot screening programme for congenital hypothyroidism.

Objective:

To determine the community prevalence of HIV in women at the time of delivery.

Methodology:

Cord blood samples were collected in a pilot screening programme for congenital hypothyroidism in 1995 at Ipoh Hospital and the surrounding district hospitals. These blood samples were screened anonymously for HIV 1 & 2. The cord blood HIV results reflected the status of the mother and not the child. HIV status was determined with a fully automated immunoassay analyser (AccessR) utilising a chemiluminescent technology (Sanoffi Diagnostics Pasteur). Positive samples were re-tested utilising the Genelavia Mixt assay (Diagnostics Pasteur). Confidentiality of the patients was maintained at all times.

Findings:

Four thousand nine hundred and twenty seven (4,927) samples were tested. Ethnic breakdown of samples was as the following: 51.7% for Malays, 18.9% for Chinese, 14.3% for Indians, 2.3% for Others and 12.9% for unknown. As for geographical distribution of the samples, 73.9% were urban, 24.2% rural and 1.9% unknown. Seroprevalence of HIV positivity was 3.25 per 1000 deliveries (95% CI: 1.92-5.16). It was also found that the seroprevalence was higher for samples from the rural areas and among Malay mothers.

Conclusion:

Although no data on the risk factors in the parents of the screened neonates were available, the high seroprevalence in this study suggested that heterosexual spread of the epidemic is far wider than anticipated by reported cases of HIV.

Recommendation:

The high prevalence of HIV strongly supported the need for antenatal screening as a means to reduce perinatal transmission. This study stressed the need for the development of a surveillance programme for HIV based on serial, unbiased, good data on the point prevalence of HIV infection. This will allow for the monitoring of the progress and projection of the HIV epidemic locally. In Malaysia the most appropriate existing mechanism of collecting blood in the community is the Glucose 6 Phosphatase Dehydrogenase (G6PD) deficiency cord blood screening programme for newborns. Alternatively HIV screening results of antenatal women can be used but this is a selected population as high risk mothers may deliver at home or present during labour and hence missed.
Audit of Diabetes in Perak Outpatient Departments

Chan SC¹, Tan OH¹, Tee AS²

1 Ipoh Hospital
2 Vector Borne Diseases Control Unit, Ministry of Health, Kuala Lumpur

Introduction:

Diabetes mellitus (DM) is a common disease in Malaysia with an estimated prevalence between 6.3% to 14.6%. With no known cure, emphasis is on morbidity reduction and prevention of complications. Uncontrolled diabetes is a major problem in day-to-day clinical practice leading to complications and increased incidence of admission, morbidity and mortality. Uncontrolled diabetes can be due to patient non-compliance from inadequate knowledge and health education. Another contributing factor is lack of competency among doctors in early diagnosis, treatment and identifying complications early for specialist referral. It is therefore imperative that practitioners looking after diabetics are knowledgeable and apply correct management principles. In 1990 an audit was done in the outpatient departments (OPDs) and medical specialist clinics of 5 Malaysian hospitals³. The results showed very poor control and monitoring of diabetes mellitus especially in OPDs.

Objective:

To assess adequacy of diabetic management in OPDs in Perak, identify contributing factors and suggest some possible remedial measures.

Methodology:

In April 1996, five outpatient departments (OPDs I-V) were selected by level of physician coverage. Two hundred diabetic patients' records from the 5 centres were analysed for adequacy of diabetic management. Diabetic patients on follow-up less than 1 year in OPD were excluded. All doctors in the 5 centres answered a questionnaire prepared by a physician to test knowledge of diabetes mellitus (DM). One hundred patients selected by random sampling were assessed on their level of knowledge on DM by a standard questionnaire taken from the Ministry of Health guidelines on diabetic health education. The questionnaires were pretested and the original passing mark was fixed at 70% for both questionnaires. After pretesting, minor adjustments to the doctors and patients questionnaires were made and the passing mark for doctors was lowered to 50%.

Findings:

Only fifty-five percent of doctors had adequate knowledge on DM management. Patients' knowledge varied between centres (13% to 80% adequacy). Majority of patient records had insufficient data to determine the adequacy of early detection. This was largely due to poor documentation in the "diabetic books" which replaced the old OPD cards. Monitoring of weight and blood pressure were adequate (100%) in centres with screeners (paramedics). Blood sugar monitoring was adequate in only one centre. Feet examination and fundoscopy were very poor in all centres. Doctors either did not examine patient's feet routinely or failed to record normal findings because of heavy workload. OPD doctors admitted they did not do fundoscopy because of the short consultation time. They also found the doctor's room not conducive for proper fundoscopy. All centres had poor ECG monitoring and ECGs were ordered only when patients complained of chest pain. Two centres had delayed referrals of complications. Reasons cited included no specialist visit, transportation problem as distance to the nearest specialist clinic was 154 kilometres, patients refused to be referred because of long waiting time for appointments and also not keen to be seen only by medical officers in the specialist clinic after the long wait. Records showed majority of patients had adequate follow up within one month of appointment dates (90% to 97%). However, because of poor feet and fundoscopy examination, overall adequacy in assessment and monitoring was 0% in all centres.
Conclusion:

Overall, control and monitoring of diabetic patients were inadequate.

Recommendation:

Refresher courses for all OPD doctors.
Use of protocols and checklists to improve monitoring of diabetics.
Utilise paramedics as screeners and have specialists visiting all centres periodically.
Abstracts

Active Resuscitation in Malaysian District Hospitals - Is It Adequate?

Chan SC
Published in Malaysian Medical Journal Vol 52 No 3 Sept 1997.

Introduction:

Active resuscitation is an emergency procedure which all medical and paramedical personnel should be familiar with. Its successful implementation depends on teamwork and available infrastructure. Inadequate active resuscitation results in mortality and morbidity which otherwise are preventable.

Objective:

1. To study the adequacy of active resuscitation in collapsed patients and
2. To give recommendations based on the findings

Methodology:

Collapse inpatients aged 12 and above (excluding those with terminal illness) were studied in 6 district hospitals between 1/1/93 and 31/3/93. Data from the hospital records were retrieved and analysed. In addition, the doctors and nurses were given self-administered questionnaires to answer.

Findings:

The results showed 25 (59.5%) out of 42 inpatients were inadequately resuscitated. It was also reported that in 42% of the cases, the duration of resuscitation was done less than 30 minutes. In addition, 44% of the resuscitation trolleys were incompletely equipped. Questionnaires revealed lack of knowledge and training in cardiopulmonary resuscitation techniques among the medical staff.

Conclusion:

The management of collapsed inpatients in terms of adequacy of resuscitation was unsatisfactory in all the hospitals studied. The lack of knowledge and training in active resuscitation techniques were the contributing factors.

Recommendations:

Based on the above findings, it was recommended that regular cardiopulmonary resuscitation courses be conducted. The supervisors should also regularly check on the emergency trolleys including the availability of resuscitation protocols.
A Malaysian Well Person's Clinic - Review of Patients seen between April and December 1995

Chan SC
Published in: Medical Journal of Malaysia, Vol. 52 No. 1, March 1997

1 Ipoh Hospital

Introduction:
Lifestyle related diseases like coronary artery disease and cancers now rank among the top 5 causes of admission to hospitals and death in Malaysia. Preventive measures such as screening for coronary artery disease risk factors and early detection of cancer are more cost-effective ways to reduce morbidity and mortality than treatment of the diseases. The Well Man & Well Woman's Clinic was started in Ipoh Hospital in April 1995 with the objective to provide the public with an opportunity to be screened for coronary artery risk factors e.g. smoking, hypertension, obesity and diabetes mellitus, and for early detection of some cancers.

Objective:
The objective of this study was to note the public response to the clinic and also the effectiveness of the clinic in picking up risk factors for coronary artery disease and also for cancer screening.

Methodology:
All casenotes of patients registered at the Well Person's Clinic between April to December 1995 were reviewed retrospectively. These records were analysed with regard to demographic characteristics (gender, age, ethnic origin), coronary risk factors and outcomes of cancer screening. Coronary risk factors that were looked at include hypertension, obesity, smoking, known diabetes, and xanthoma. In screening for cancers, a previous personal or family history of cancer, and also a history of smoking, was sought. Results of the physical examination and investigations such as Papanicolaou (Pap) smear, chest x-ray, sputum cytology, and ultrasound, when requested, were noted.

Findings:
A total of 1095 persons (20% males and 80% females) were screened during the study period. Majority (57%) was aged between 40 and 59 years. Forty-eight percent of patients (526) were found to have one or more coronary artery risk factors. Twenty-nine percent (323) had one risk factor, 14% (150) had 2 and 5% (53) had 3 or more risk factors. Amongst them, modifiable risk factors and its percentages included hypertension (10%), obesity (9%), diabetes mellitus (8%), and smoking (7%). During the cancer screening, 6 cancers (3 cervical, 2 breast and 1 ovarian) and 16 abnormal Pap smears were detected.

Conclusion:
Public response to the Well Person's Clinic is good and very encouraging. The clinic detected among those screened; almost half had one or more risk factors to coronary artery disease. Six patients with cancers were also picked-up.

Recommendations:
There is an urgent need to screen more persons for coronary artery disease risk factors as well as for cancers, considering the high mortality and morbidity rates for these diseases in Malaysia.

More Well Person's Clinics should be set-up not only in outpatient departments of hospitals but also in other primary care centres including private general practitioner (GP) clinics.

Existing clinics should be expanded to cover a larger population and also to expand their scope of services provided, such as screening for coronary risk factors.
Review of Bedside Dispensing and Counselling Service

Khew HM', Basariah N.', Gan BZ'

Published in: Drug Bulletin, Jabatan Farmasi Hospital Seremban, Vol. 7 No. 1, March 1998

Introduction;

Bedside dispensing and counselling service to discharge patients has been introduced incrementally in Seremban Hospital since April 1996. The aim of the service is to provide information on discharge medication to enhance drug compliance among patients.

Objective:

The main objective of the study was to review the service by getting feedback from patients, nurses and doctors. Suggestions to upgrade the service were also made based on the feedback and experience of pharmacists who participated in the service.

Methodology:

The study consists of two parts, one covering the responses from patients while the other seeking the views of the medical personnel from the wards. Discharged patients were given their medicine and also given appropriate counselling. Patients were then asked to answer a questionnaire in order to assess their views on the service. To get views of doctors and nurses, a different set of questionnaire was also distributed to selected wards where the service was provided.

Findings:

A total of 123 patients were interviewed from February to April 1997. Over 98% of the patients found that the information on their discharge medication was adequate and useful. A total of 50 copies of questionnaire for medical personnel were distributed to nurses and doctors from the selected wards. Although the response rate was only 36%, results showed that over 94% of the nurses and doctors who responded felt that the service increased patient's understanding of their discharge medication and allowed pharmacists to provide more detailed information to the patient, compared to counter dispensing.

Conclusion:

Bedside dispensing and counselling offers the pharmacists tremendous opportunity to provide better pharmaceutical care to the patients. Daily interaction with the doctors and nurses in the wards also enabled the pharmacists to work very closely with other medical personnel to ensure the best possible service for the patient and other medical professionals.

Recommendations:

1. To increase the number of pharmacy assistants for prescription filling so that pharmacists can concentrate more on drug counselling.

2. To assign a full-time pharmacist at the Satellite Pharmacy, who will serve a few wards that are physically close-by, to cater for the drug dispensing and counselling needs of patients being discharged. With this system too, better monitoring of the patient’s condition and changes in treatment regime can be carried out.

References:

[References provided here]


**Study on Inhalation Technique - Extent of Technique Error**

*Ratna H.S.*, *Che Pun B.*, *Gan BZ*

Published in: Drug Bulletin Jabatan Farmasi Hospital Seremban Vol. 6 No. 2, July 1997

1 Seremban Hospital

**Introduction:**

The pressured metered dose (aerosol) inhalation (PMDI) is an effective and convenient method of drug administration for mild to moderate airway obstruction. Duration of action of the inhalation depends on the drug and dose administered. Patients need to know the method of use to maximise the delivery of the drug directly to the bronchi and minimise unwanted side effects. Most patients can be successfully taught to use the PMDI but some, particularly the elderly and small children, are unable to utilise them effectively due to the difficulty of synchronising their breathing with the aerosol administration.

**Objectives:**

To determine the extent of inhalation errors for patients treated at Seremban Hospital and to educate patients on the use of medication, particularly the difference between relief and preventive therapies. This will help patients obtain full benefit from their treatment and improve patients' compliance.

**Methodology:**

One hundred asthmatic patients were interviewed at Seremban Hospital, based on a prepared questionnaire. The patients' inhaler technique were evaluated by having them demonstrate the use of their own inhaler and scored according to a checklist of correct steps to be taken.

**Findings:**

The study showed that 20% of the patients' inhalation technique were unsatisfactory, 33% were just satisfactory and only 47% were able to exhibit the proper technique. Patients who were given the inhaler with the instruction leaflet only without verbal instruction and demonstration often failed to use their inhalers optimally. They contributed about 50-60% of the failed cases in this study. In situations where the inhalation devices were not functioning properly, the majority (57%) did not know why their inhaler were not working and 43% offered reasons such as dirty and clogged mouthpiece or wrongly assembled. Out of 100 patients interviewed, only 49% of patients knew how to clean the aerosol mouthpiece.

**Conclusion:**

This study revealed that there was a high percentage of errors in inhalation techniques among our patients. Therefore, it is important for all staff including pharmacists, doctors and nurses to educate and guide patients in using their inhalers correctly in order to improve the morbidity and mortality of asthmatic patients.

**Recommendations:**

Continue and step-up bedside counselling as well as mass counselling.

Make the sessions more interesting by encouraging more patient involvement in the sessions.
ABSTRACTS OF UNPUBLISHED STUDIES
The Perspective Of Individualized Patient Care
In Bukit Mertajam Hospital

Aminah H.¹, Ch'ng SC¹, Vijaya R.¹, Zainab I.², Fatimah A.², Zuridah A.H.²

Introduction:

The traditional nursing approach is task-centered, with nurses being assigned specific tasks. It prevents patients being seen as individuals; the fragmented nature of this care reduces communication, resulting in psychosocial problems being neglected. In 1992, the concept of individualized patient care was introduced and it was heralded as an innovation to provide a higher standard of care. Since then, much effort has been directed towards its implementation throughout hospitals in Malaysia.

Objectives:

To assess the knowledge and skill of nurses towards the concept of individualized patient care and to gauge patients' satisfaction towards the care given with its implementation.

Methodology:

A descriptive cross-sectional study was undertaken. Self-responded questionnaire were distributed to 15 staff-nurses and 100 patients of ward 5 Hospital Bukit Mertajam. The responses were then graded by the researchers.

Results:

One hundred percent of the nurses in this study claimed that interviews in the individualized patient care plan were helpful in collecting data, identifying and prioritizing patients' problems, confirming their nursing diagnosis, and facilitating nursing care plan. The results also showed that 93.3% agreed that the nursing process involved in this care plan would update their nursing knowledge. Although a large percentage (73.3%) said the nursing process enabled them to practice autonomous nursing care, only 66.7% agreed that the nursing process should be used in the delivery of care.

With regards to patients satisfaction towards the implementation of individualized patient care, 80.6% commended the high quality of nursing care while 98.8% remarked that nurses identified them as individuals, showed concern over their illness and problems. Ninety-five per cent of the patients claimed their anxiety were reduced.

Conclusion:

The knowledge and skill of the nurses with regard to individualised patient care were noted to be satisfactory. The patients too were satisfied with the care given.

Recommendations:

There was a need to establish a system whereby the nursing process formats can be available at all times. Nevertheless there was still a need for the local education committee to conduct workshops on the standard care-plans to assist nurses in care planing.
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Cheah SP, Jegarajan, Chun LH, Loh KH, Mahrusah J.

1 Penang Health Department
2 Muar Dental Clinic
3 Kluang Hospital
4 Johor Bahru Dental Clinic

Introduction:

DMF, the main index used as a measure of oral health only identifies a person's caries experience. In the absence of the disease, a person's DMF score is still present (albeit high) due to his previous caries experience. Hence, DMF does not actually represent a person's current oral health status. For this matter, neither does CPITN. The latter is a commonly used periodontal index and it is limited to measuring periodontal treatment needs alone. Thus there is no one index that could take into account all the parameters that constitute oral health together. The CUSP index was an attempt to address this problem which took into consideration the health condition of all the essential oral tissues - the teeth, the periodontal condition, soft tissue and others.

Objectives

This study attempted to:
1. provide a means of patient awareness of his oral health
2. create an impact on the patient regarding his oral health
3. provide the dental practitioner an overall view of the oral health status of the patient
4. to assist the dental practitioner in treatment planning and referral

Methodology:

The first phase was to test the possibility of consistency among operators (examiners) on the use of the index without strict standardisation of the diagnostic criteria. Patients recruited for this exercise were from the age groups 4 - 5 years (total deciduous dentition), 9 - 10 years (mixed dentition), 15 - 16 years (early permanent dentition) and more than 45 years (matured permanent dentition).

The second phase involved the examination of outpatients in 4 main dental clinics in Johor. A questionnaire was used to ascertain the level of understanding by the patient and whether there was an urgency for him to seek any necessary treatment. A second but different questionnaire survey was also conducted concurrently on the operators, soliciting their opinion on the suitability of use of this index.

Findings:

In phase one, the consistency and accuracy of the index among the operators were high among dentists, dental staff nurses and between the dentists and staff nurses in all the CUSP components. For phase two, patients' awareness of the oral status was increased upon understanding their individual CUSP score. In general, there was a general consensus that CUSP has the potential of a useful overall indicator of oral health status.

Conclusions:

The CUSP index has been rated favorably both by patients and operators.

Recommendations:

For community and public health application, the index was able to quantify the total treatment need without having to involve too many indices and indicators. This in turn may lead to saving of resources to obtain such basic information.
Birth Before Arrivals Deliveries in the District of Kulim, Kedah Darul Aman

Choong JL

Introduction:

In 1992, nearly 20% of home deliveries in Kulim District were Birth Before Arrivals (BBA) deliveries. The term "BBA" refers to "born before arrival" of midwife and is used to describe deliveries where the baby has been delivered with or without the delivery of the placenta. BBA births come under the category of non-safe deliveries and are actively discouraged.

In 1990 and 1991, BBA births as a percentage of all births in district of Kulim was over 5% but has steadily declined. By home deliveries, the percentage of BBAs has also declined, from 19.2% in 1992 to 16.6% in 1993.

Objectives:

The main objective of the study was to determine factors related to the delivery of babies who were born before the arrival of the midwife.

Specific objectives include:

- to identify the characteristics of BBA mothers
- to determine the level of antenatal care provided to the mothers
- to determine factors or barriers related to BBA deliveries
- to note the outcome of mother and baby in BBA deliveries

Methodology:

The review was conducted in 1994. The Public Health Nurse, in whose area the BBA birth had occurred, investigated all cases of BBA deliveries, using a prepared format. A total of 76 (18%) BBA births occurred among 424 home deliveries in the district. All seventy-six mothers of the BBA babies were interviewed and the Public Health Sister then reviewed the completed formats. If necessary, the mother was re-interviewed. Data was then analysed manually.

Findings:

Malay mothers had the highest number of BBA births (72.4%). BBAs also occurred more frequently among ladies between the ages of 20 to 35 years. More than 80% had at least primary schooling and majority (63.1%) were housewives. For the majority (72.4%), this was their first episode of BBA. Repeat BBAs also occurred with up to as many as 6 previous BBAs.

About 52.6% of mothers lived within 2 km of a health facility. Only 5% of them lived more than 10 km away and most (88.2%) had some means of transportation. Although their antenatal care appeared adequate, still 42% of high-risk mothers had BBA deliveries.

No attendants were present in 55.3% of cases. As many as 14.5% of cases were still attended by Traditional Birth Attendants (TBA). Neighbours attended to another 13.2%. Main reasons for not calling the midwife early were "unexpected delivery" (26.3%); "scared to be sent to hospital" (21.1%), the unavailability of the midwife (17.1%) and lack of transport (13.2%). The babies' outcomes were generally good, but there were 3 stillbirths and 3 babies needed hospitalisation. Ten mothers (13%) had developed complications, which were mainly perineal tears (6.6%)

Discussion/Conclusion:

The survey showed that the district of Kulim had 76 BBAs in 1994. This was 2.3% of all deliveries. Overall the percentage of BBA deliveries has decreased, but when considering only home deliveries, BBA deliveries made up 17.9% of the cases and this was higher than for the year 1993. One of the factors causing
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this was possibly the unavailability of the midwife during labour. There were many unfilled posts of community nurse and midwife and this could have been a factor compounding the issue.

It would appear that not having any living children yet was not a deterrent for BBA births. Eleven of the mothers had no living children at the time. Some of these mothers belong to sects with alternate birthing beliefs, with husbands managing the labour and conducting the delivery. In other cases, when the mother had a previous BBA that was uneventful, she may continue with another BBA delivery subsequently.

Distance from health facility also does not seem to be a possible causal factor for these BBAs as more then half of the mothers lived within 2 km of a health facility. In fact, none of the mothers stated distance to be a reason for the BBA births, although lack of transport was cited as the fourth most common reason.

Deliveries by TBAs appeared to be much lower compared to a study that was done in Baling in 1987 where TBAs conducted 56% of the home deliveries (Koay, M.).

Recommendations:

1. Health staff and TBAs should have good and close rapport. The health staff in whose area a TBA resides should establish a good working relationship with her. It should be emphasised to the TBA that it is all right to carry out traditional and religious birthing practices which are not harmful to mother and child. However delivery of baby, placenta and cutting of the cord must be left to the government midwife (GMW), who has been trained in aseptic techniques.

2. Meetings with and classes for TBAs should be held regularly to provide a forum for discussion as well as for some form of training for the TBAs.

3. All high-risk mothers must be informed of their risk factors and strongly urged to deliver in hospital. This advice should be repeated at each antenatal/home visit to the patient.

4. Health education activities should include advice to all mothers to call the GMW early during labour. Health education should also emphasise on symptoms and sign of early labour as a large number of mothers claimed their delivery was unexpectedly early. It must be stressed that mothers should be prepared for delivery after the 38 weeks of pregnancy.

5. Special attention should be paid to those mothers who have had previous BBAs. Health education about the ill effects of BBA deliveries should be emphasised to them as well as to other decision-makers in the family.

6. The name and clinic of the relieving GMW should be clearly stated on the notice board in the event that the local GMW is not at her station, for reasons such as leave, sick leave relief or on courses. As far as possible a relief staff should be available in the next nearest facility.

8. As a disincentive for TBAs to conduct cases, it can be pointed out to them that what they are doing is against the law (Midwife Act) and can be fined or imprisoned. Mothers who frequently have BBAs can be hindered during the process of acquiring the birth certificate by the delay/refusal to sign the small antenatal card required for registration of birth at the local police station.
A Study of the Documentation Status of Laboratory Request Forms In Pulau Pinang Hospital

Halimah Y.', Badrul Zaman A.A.', Ayob B.', Gunalan S.', Othman H.'

Introduction:

Laboratory request forms are used by clinicians to request for tests to aid in diagnosis and subsequent management of patients. Their proper documentation is essential not only to enable results to be interpreted accurately but also to ensure that these results were sent back on time to the requesting doctor. Pulau Pinang Hospital encountered this and a study of the laboratory request forms was undertaken in 1997.

Objective:

1. to identify the type of documentation errors;
2. to identify the factors contributing to the documentation problem and
3. to recommend remedial measures.

Methodology:

A total of 1200 request forms were selected at random and the doctors who made the requests during the particular period were asked to answer a self-administered questionnaire.

Findings:

The problem of incomplete documentation had been identified. It was found that 24.9% did not have the date on the request form and 21.8% failed to document the date for specimen collection. In 9.3% of the forms, the identity of the requesting doctor was not known.

Results also showed that 73.5% of the doctors said that they were too busy, 70.5% felt that it was too time consuming. 20.5% admitted that there did not know it was important to fill the forms completely and a similar proportion also felt that the forms were not user-friendly.

Conclusion:

Various reasons were identified by the doctors for their inadequate documentation of the request forms. These heavy workload and perception that it was too time-consuming.

Recommendations:

Possible remedial measures proposed include the use addressograph and the formal orientation of both old and new doctors in the proper documentation of these forms.

1 Kinta Health Office
Introduction:

Quality Assurance Indicators has been introduced by the Ministry of Health for outpatient services at Primary Health Care level. One of the indicators is "Appropriate Management of Asthma Cases by Primary Health Care Personnel". The district of Kinta was among 4 districts nationwide selected to carry out the pilot project.

Objective:

A baseline study was carried out to determine the existing level of care provided to Asthmatic cases.

Methodology:

A convenient sample of 530 asthma cases treated as outpatients were selected. Interviews were carried out using standard scoring formats prepared at National level. For this purpose, training was conducted for the interviewers comprising of medical assistants, staff nurses and medical officers. All primary health care (PHC) facilities were involved in the study. This comprised of 8 health clinics, 5 urban polyclinics and 3 hospitals.

Findings:

The result of the study showed that 113 (21.32%) out of 530 asthma cases had achieved a score of 1.5 only. The maximum score of 6.0 was achieved by only 15 cases (2.83%) while the lowest score were achieved by 2 cases (0.38%). The majority of cases however had achieved a score of 5.0.

On the whole it was found that the majority of cases from health clinics, urban polyclinics and smaller hospitals had scores of that between 1.5 - 3.0. In contrast, the majority of cases from Ipoh Hospital scored between 5.0 -
Determining the knowledge and practise of universal precautions among health staff in Health Clinics and Community Clinics in Negeri Sembilan

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2 Rembau Public Health Training School

Introduction:

Health staff should realise the importance of universal precautions in preventing the occurrence of infection while handling of body fluids. Universal Precaution has been emphasised during in-service training and guidelines on Universal Precautions has been distributed to all hospitals and health clinics.

Objectives:

This study was conducted to ascertain the extent of knowledge and practise on universal precautions among health staff.

Methodology

Two community clinics and two health clinics were chosen by simple random sampling based on their clinic schedule sessions. The study was conducted into 2 parts using a self-administered questionnaire and also through observation of practise. Observations were made on procedures that were carried out during clinic sessions. A checklist was used with a method for scoring which utilised a points-system that gave more weightage to the more critical steps in the procedures.

Findings:

There were 128 respondents to the questionnaire, consisting of 55 (43%) staff nurses, 54 (42.2%) community nurses and 19 (14.8%) trained midwives. Their mean period of service was 15.7 years. Forty-five respondents (35.2%) claimed they had never been trained on Universal Precautions. None of the respondents could give the full definition of Universal Precautions. Almost all (99%) could give correct answers to the question of body fluids that contain HIV/HBV/HCV. On questions to procedures for venepuncture, management of labour/home delivery, spillage of body fluid etc., none of the respondents could give accurate Universal Precaution steps and personal protective equipment that should be used in these procedures. Half the respondents (64 respondents) still gave answers such as "needles should be recapped and bent before throwing away". None of the respondents could give the proper procedure on how to handle needle stick injury.

A total of 22 procedures were observed. Generally, it was noted that the nursing staff had better practise of universal precaution compared to Medical Assistants. During urine examination, 60% (5) of the staff observed were seen pouring urine specimens into the sink and not the toilet bowl. In 2 procedures, Health Attendants observed doing the dressing and suturing of a laceration, obtained very poor scoring (7/20 for suturing of laceration wound).

Conclusion:

Results of this study has shown that even though in-service training and guidelines have been provided to all, the level of knowledge of health personnel on the practise of universal precaution is still very low. This is evident even for frequently conducted procedures such as venepunctures, cleansing of thermometers, conducting a delivery and examination of the placenta. Taking short cuts in procedures become lasting bad habits that are still difficult to change.

Recommendations:

District Health Officers were informed of the study findings with the expectation that procedures for Universal Protection will be made a routine agenda in any visit or facility inspection. Also that there will be closer supervision of staff on the matter. Continuous up-dating on the knowledge about Universal Precautions is important. Supervision by sisters and senior medical assistants utilising a checklist to observe the practise of universal precautions is recommended. Medical and Health Officers
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should be given an expanded role on supervision particularly of Health Attendants in Health Clinics who were found to be given very little emphasis on the importance of the practise of Universal Precaution. Pamphlets on Universal Precaution in Bahasa Malaysia should be prepared and distributed to all Health Clinics/Community Clinics. These pamphlets should contain salient points on Universal Precaution to be practised by health personnel.
Breast-feeding Practices among Ante-natal Mothers in Jerantut Hospital

Kamsiah H.

Introduction:
The decline in breast-feeding practices has been a major concern within the Ministry of Health and many activities had been launched throughout the country as remedial measures. The majority of these activities had been targeted at ante-natal mothers attending their clinic sessions.

Objective:
To identify the factors preventing the successful promotion of breast-feeding activities.

Methodology:
One hundred mothers attending the ante-natal clinic between March to December 1995 in Jerantut Hospital were studied. Interviews of these mothers using a prepared questionnaire were carried out.

Findings:
It was found that only 32% of the mothers breastfed their babies for less than 6 months. The majority (55%) practiced breastfeeding up to a year. The mean breast-feeding period was 8.73 months. Ninety one per cent of the ante-natal mothers studied were Malays and 9% were Chinese. Their age range was between 20 to 40 years. Ten per cent were graduates with 68% having completed secondary schooling.

Despite the good educational background of the majority, 37% had the idea that mother’s milk was not complete. They had suggested that infant formula of any brand should be added.

Conclusions:
Breastfeeding practices among the women attending the ante-natal clinic sessions as evidenced from this study had not been satisfactory.

Recommendation:
There was a need to strengthen the health education component of the breast-feeding campaign in the district.

Padmanathan¹, Jasbeer S.², Partheeban³, Gan SC⁴, Bala S.⁵

Introduction:

A study on all nutritionally anaemic antenatal mothers was carried out in the district of Bandar Baru. It had been noted that despite the provision of adequate haematinics, anaemia among antenatal mothers was a major problem.

Objective:

The objective of the study was to identify possible factors leading to the problems of persistent nutritional anaemia among antenatal mothers.

Findings:

The result showed that out of a total of 90 antenatal mothers, 72 (80%) were persistently anaemic despite having been provided with haematinics. Poor compliance to taking the haematinics appeared to be the main contributory factor. It was found that despite being aware of the implication of anaemia in pregnancy, their compliance rate was low (33%). The study also revealed that majority (50%) of these poor complying patients were housewives from average family income group (RM700-RM1500) and had achieved secondary level of education. Neither gravida nor parity seemed to have an effect on compliance.

Conclusions:

Poor compliance was the contributing factor for the occurrence of persistent anaemia among ante-natal mothers. This poor compliance to haematinics were highest among housewives with secondary education and from average income.

Recommendations:

To ensure the success of prevention of nutritional anaemia, there is a need to focus and intensify the existing health education programme to the specific target group. However more importantly, there is a need to identify the reasons for their poor compliance and rectify them.
Knowledge, attitude and practice of taboos in food practice and its influence on the nutrition level and health of Orang Asli mothers and children in the interiors and fringe areas of Kuala Lipis District

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1 Kuala Lipis Health Office

Methodology:

This cross-sectional comparative study was carried out in 2 areas, i.e. the remote area of Pos Sinderut and the fringe area of Pos Betau by trained health personnel in September and October of 1997. These areas had been selected through multistage randomised sampling at Pos and village level. All mothers in the 2 villages, who have at least one child aged between 1-4 years, and their children (aged between 1-4 years) were the subjects of this study. A questionnaire was developed based on social and cultural background regarding food taboos and other indication of health status. There were 225 respondent, of which 151 (59.2%) were from Orang Asli from the fringe area and 104 (40.8%) were from the remote area.

Findings:

The result of this study showed that Orang Asli from fringe areas (Pos Betau) had much better knowledge regarding proper food practices (P<0.001), getting treatment at health facilities (P= 0.0005) and health status (clean toilet, P= 0.001, clean environment, P<0.001 and clean sanitation P= 0.006).

Paradoxically, they preferred seeking treatment from traditional healers (P= 0.009). Their haemoglobin levels were much lower when compared to the respondents who lived in the more remote area (P = 0.019). Those who lived in the remote area still had strong beliefs in food taboos (for example, during pregnancy, P< 0.001, and in the postnatal period, P<0.001). There was no significant difference in food practice between the children of the two communities.

Conclusion:

Mothers in the fringe village had a better health status and food practice compared to those from the remote interior. This is because their knowledge level is higher and they do not practise food taboos and customs as rigidly or
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less than mothers from the more remote areas.

**Recommendations:**

Based on the result of this study, a more comprehensive systems approach to health promotion and health services should be carried out for the Orang Asli community. This should involve co-operation between all agencies looking into their health and welfare, to increase the status of the Orang Asli population.

Such a system should include augmenting the health education activity by using the local Orang Asli language when delivering talks, using a successful Orang Asli community as a model example and utilising more effective audio-visual equipment. Visits to successful Orang Asli villages should be arranged and a local person could be trained as the village health representative on a voluntary basis for every village.
Utilisation of Portable Radiographs in Melaka Hospital

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1 Malacca Hospital

Introduction:
Portable x-rays are x-rays done in the wards by the patients' bedside. This x-ray service is extended to:

a) patient who are haemodynamically unstable
b) critically ill
c) immobilised patients.

There has been an increasing trend in the number of portable x-rays in Melaka Hospital. From 1991 to 1993, the number has increased by 55%. This increase has led to an increase in workload, cost and expenditure for the x-ray department.

Objectives:
The objectives of this research project were:
1. to study the pattern of utilisation of portable x-rays;
2. to verify the magnitude of unnecessary requests for portable x-rays;
3. to verify the number of unnecessary repeat portable x-rays;
4. to identify the contributory factors leading to the increase usage and
5. to implement appropriate remedial measures.

Methodology:
A prospective descriptive study was carried out from 1.8.1994 to 1.11.1994. Prior to this, a pilot study analysing 100 portable x-ray requests was performed in July. It confirmed that most portable x-rays were of poor quality.

Findings:
The study revealed that only 7% were unnecessary x-rays and 8% unjustified repeat x-rays. This low percentage indicated that the portable x-ray service in our hospital was appropriately utilised. In addition only 9.4% of the x-rays were of poor quality x-rays. This was acceptable considering the low powered portable x-ray machines used.

Conclusions:
The wastage attributed to portable x-rays were minimal despite the increasing utilisation of portable x-rays.

Recommendations:
It was recommended that the doctors be made aware of the risks and expenses associated with the use of portable x-rays. This was to ensure that the percentage of unnecessary portable x-rays were kept at a minimum.
Error in Outpatient Prescription

*Tan KH*, *Jamel H.*

Introduction:

There appears to be too many prescription errors in outpatient prescription received by the Pharmaceutical Division. As a result of these errors the waiting time may be increased, wrongful dispensing of drugs may occur and patient satisfaction diminished. This was a preliminary study aimed at improving prescribing standards in Hospital Balik Pulau.

Objectives:

1. to determine whether patients receive the correct medication;
2. to determine the percentage and types of errors involved;
3. to identify the contributing factors for the errors and
4. to recommend remedial measures.

Methodology:

All patients attending the outpatient clinic in a period of one month from 1st May till 1st June 1997 were selected. This first study involves identifying errors done, which was subsequently followed by remedial action. A second study had been scheduled for six months later whereby the results obtained would be compared. A survey form was filled up by the pharmacy assistant whenever prescription errors were detected among all patients attending the outpatient clinic in a specified period of one month.

Findings:

Sixty prescriptions (1.38%) out of a total of 4232 prescriptions were found to contain errors. The most common error was the failure to specify the duration for taking drug treatment. Other errors identified were either improper or absence of documentation of personal data of the patient on the prescription.

Conclusion:

Errors had been identified in the prescription slip and these was mainly due to the illegibility of handwriting by the doctors.

Recommendation:

The results of the study were made known to the doctor and the doctors' cooperation were sought not only for filling up the prescription completely but also for the verification of the patients' identity.
A Study of Post-operative Pneumonia in Penang Hospital

Tan MH, Yew SF, Khoo SH, Poo SP, Chuang BK, Tan AG, Jayagopi M, Rajpal S, Ong HC, Mary C, Wong PL, Salina I, Bhavni V

1 Penang Hospital

Introduction:

Post-operative pneumonia is felt to occur at a high rate in Penang Hospital. The consequences of such a high rate would be an increase in mortality and morbidity. The latter would result in longer hospital stay, higher treatment cost and unnecessary anxiety to both patients and their families.

Objective:

1. to determine the percentage of patients undergoing surgery under anaesthesia who subsequently develop post-operative pneumonia.

2. to identify the contributing factors that led to such occurrences and

3. to recommend remedial measures

Methodology:

A descriptive comparison study was carried out in Penang Hospital from August to November 1997. Patients who developed post-operative pneumonia were identified and included. For the comparison group, a random selection of adult patients who did not develop post-operative pneumonia was included in the study. Information was obtained from the patients medical records including the operative and anaesthetic records.

Findings:

A higher proportion of patients operated under general anaesthesia developed pneumonia compared to those operated under regional anaesthesia (1.5% vs 0.2% respectively). The highest pneumonia rates occurred in patients operated under Neurosurgery (4.9%), General Surgery (3.3%) and Cardiothoracic Surgery (2.1%). Patients who developed pneumonia were then compared with 393 adult from the comparison group. Compared to the latter, patients developing post-operative pneumonia were older, had a history of smoking and suffered from chronic obstructive airway disease. They were also more likely to have ASA grades III and IV (64.3% vs. 19.0%) and impaired conscious level (39.3% vs. 4.1%). In addition, the use of H2 antagonists was more common in those who developed pneumonia (28.6% vs. 8.0%).

Comparing the operating time, it was noted that the post-operative pneumonia patients had longer operation time (average duration of surgery 177 minutes vs. 109 minutes). Similarly, the occurrence of other post-operative complications were higher in the pneumonia patients and they were also more likely to require mechanical ventilation (82.1% vs. 12.2%). It was also found that only 25.0% of patients who developed post-operative pneumonia were referred for physiotherapy preoperatively.

Patients with postoperative pneumonia had an increased length of hospital stay, increased duration of mechanical ventilation and a mortality rate exceeding 30%.

Conclusions:

The patients with post-operative pneumonia were more likely to have a higher mortality and increased morbidity.

Recommendations:

Measures which may help to reduce the occurrence of postoperative pneumonia in Penang Hospital are strict infection control measures, improved surgical and anaesthetic management and postoperative analgesia, and also an expanded physiotherapy services for high risk surgical patients.
A Study on the Usage of Vaccines in the Maternal and Child Health Programme in Muar District

Wong FS1, Chew PT, Fatimah S.M.1

1 Muar Health Office

Introduction:

In 1991, the immunisation coverage in particular BCG, TA 3rd dose, Measles and Rubella for the District of Muar was found to be poor and lower the Johor State’s figure. It was suspected that the stringent control in the usage of vaccines in order to minimise vaccine wastage and reduce cost could be contributing factors. In 1992, the nursing staff were instructed to step up the coverage. Among the efforts taken was to open new vials of vaccine whenever necessary.

Objective:

1. to determine the extent of vaccine wastage and
2. to recommend remedial measures

Methodology:

A review of the district’s 1991 and 1992 HMIS formats relating to immunisation and the pharmacy’s financial records were undertaken.

Findings:

It was found that the highest vaccine wastage was for BCG (64.2%), followed by Measles (61.0%). Wastage for the other vaccines ranged from 17.9% to 24.2%. The reason for vaccine wastage was natural loss (83.7%) of which 8.4% of the wastage had been due to exceeding the expiry date and 6.2% due to presence of sedimentation in the vaccines.

When compared to 1991, there was an improvement in the District’s immunisation coverage in 1992 with minimal increase in vaccine wastage (26.0% in 1991 to 27.9% in 1992). An additional sum of RM 586.71 was involved for the latter.

Conclusion:

There had been an improvement in the immunisation coverage with minimal increase in financial cost.

Recommendations:

Although there had been an improvement in coverage, there was a need for better control in the indenting and monitoring of vaccine usage. The close monitoring will facilitate the identification of clinics which suffer high wastage for immediate remedial measures to be taken.
Assessment of Diabetic Patients' Knowledge and Practice towards Diabetes Mellitus in Diabetic Clinic of Bukit Mertajam Hospital.

Yu CC¹, Aminah H.², Mohd Zaini H.¹, Ooi SG³, Hendon A.³

Introduction:

Diabetes mellitus is a life-long disease requiring the patients to modify their life-styles. It is therefore largely self-management and self-reliance, backed up with education and professional support. Diabetes mellitus is being associated with high mortality and morbidity, and because of its chronicity, it consumes large portion of the health system budget. Consequently, a descriptive cross-sectional study of Type II diabetic patients of Hospital Bukit Mertajam was carried out.

Objectives:

1. The objectives of the study were to determine the knowledge of the patients, their compliance and the control of their diabetes status and

2. to make recommendations for improving the education programme.

Methodology:

Two hundred samples were chosen in a systematic, randomized manner. An interview was conducted using a structured questionnaire and scores calculated for patient. Glycaemic control was assessed through HbAlc.

Findings:

The study showed that 65% out of the 200 diabetic patients comprising of the various ethnic groups were more than 50 years old. In addition, 60.5% had achieved primary education. Although weight reduction is associated with better glycaemic control, 45% of them were either obese or overweight, with 60% being females. The overall glycaemic control of this group was far from satisfactory despite self-reported good compliance to medication and follow up. Glasgow et al (1986,1997) have shown that most diabetes patients closely follow the medical aspects of their regimen, but are more resistive to demands to changing their life-style. For effective management of diabetes mellitus, the patients must be able to self-monitor diabetes control. In this group, only 5.5% had adopted this practice. Although exercise is useful for diabetes, only 25% of them were aware of its importance while 18% only recognised the importance of foot-care.

Conclusions:

From the results, it was concluded that the knowledge of the diabetic patients regarding the management of diabetes were poor. Although there were claims of good medical compliance and follow-up, glycaemic control was unsatisfactory.

It is recommended that a well-structured diabetic health education programme is required. Greater emphasis should be placed on the importance of diet, weight control, exercise, foot-care and complications of diabetes. Personnel trained in diabetic health education should not only provide information but inculcate in patients a sense of self-reliance and responsibility towards the management of their condition.
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