

# FACULTY OF PUBLIC HEALTH MEDICINE

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## TRENDS IN AIR QUALITY AND HEALTH

B. O'Donnell.

Community Care Services, Rathdown Road, Dublin 7.

Atmospheric pollution in this country is mainly a Dublin city problem. Even there it is only a problem in the months of November, December and January when thermal inversions occur. The main sources of pollution are the burning of soft bituminous coal in dwelling houses and the fumes from vehicular traffic.

The banning of use of bituminous coal under the Marketing, Sale and Distribution of Fuels Regulations 1990 has been followed by a marked drop in pollution levels over the past two winters, however there is evidence that these pollution levels were dropping for other reasons before the Regulations came into force.

Since 1980 we are obliged under a European Community Directive to monitor air for smoke (particulate carbon matter), sulphur oxides, lead and nitrogen oxides. It is likely that as time goes on that other pollutants will be added to this list e.g. ozone and volatile organic compounds (V.O.C's) such as benzene, toluene, chloroethanes, aldehydes, styrenes etc. These pollutants arise from industrial processes and can have health implications. They are at present being monitored in many European countries on a voluntary basis.

## DUBLIN 1992 - A HEALTHY CITY? - A POSITION STATEMENT

C. B. Hayes.

Eastern Health Board, Dublin.

The purpose of the position statement<sup>(1)</sup> has been to set out the facts concerning the health of Dubliners. The statement outlines the current state of health of the people of Dublin using the WHO Health for All targets and healthy cities parameters<sup>(2)</sup>. It documents the principal causes of mortality and morbidity in Dublin compared to the remainder of the country. It describes how health is affected by such factors as lifestyle, health promotion, the social and physical environment, and emphasises the range of health issues affecting Dubliners. The existing measures being taken by statutory, voluntary and community groups to improve the health of Dubliners and the major areas of concern requiring consideration are outlined.

The aim of the position statement is to make Dubliners more aware of the factors that affect health so that they may make a fully informed contribution to the formulation of a Health Plan for the city. This will be carried out in conjunction with the health and local authorities.

It is intended that the statement will stimulate a wide ranging debate on health to which Dubliners are invited to contribute.

### References:

1. Hayes, C., Doorley, P., Bateson, R. Dublin 1992 - A Healthy City? A Position Statement. Dublin: ELO Press, 1992.
2. World Health Organisation. Targets for Health for All, 1986.

## THE COMMUNITY MOTHERS' PROGRAMME: A RANDOMISED CONTROLLED TRIAL OF NON-PROFESSIONAL INTERVENTION IN PARENTING

Z. Johnson, F. Howell, B. Molloy.

Health Information Unit, Eastern Health Board, Dr. Steeven's Hospital, Dublin 8.

The objective of this randomised controlled trial was to determine if non-professionals could deliver a Child Development Programme effectively to first-time mothers. Of the 262 first-time mothers entered into the study, 232 (89%) completed it as envisaged. At the end of the study period (1 year), mothers in the intervention group had a better self-esteem profile and ate a better diet than the controls. Children in the intervention group also had a better diet profile than controls at one year, and only 24 of the intervention group as opposed to 49 of the controls introduced cow's milk before 26 weeks,  $p < 0.001$ . Significantly more children in the intervention group received their primary immunisations than controls (109 v 68,  $p < 0.001$ ). Intervention group children were read to more often than the controls and received more stimulation from their mother. Mothers in the intervention group had a more positive outlook on the preceding year than the controls (positive feelings:  $2.6 \pm 1.3$  v  $1.2 \pm 1.0$ ,  $p < 0.0001$ ; negative feelings:  $0.9 \pm 0.9$  v  $1.4 \pm 1.2$ ,  $p < 0.001$ ).

In conclusion, this study demonstrates that non-professionals can deliver a health promotion programme on child development effectively. Whether they can do so as effectively as professionals requires further study.

## REASONS FOR NON-ATTENDANCE AT THE DEVELOPMENTAL EXAMINATION

A. L. Keane.

Community Care, Vergemount Hall, Dublin 6.

Objectives: To determine the reasons for a child's non-attendance at their first developmental examination; mothers' knowledge and attitude to the examination and their preference for the doctor performing it.

Methods: A case-control design was used. A structured questionnaire was administered to 60 cases (non-attenders) and 250 controls (attenders) over a 6 month period. The chi-squared statistical test was used in the analysis.

Results: The attendance rate was 72%. "Forgot" was the most common reason given for defaulting (20% of cases). The following factors were found to be significantly associated with attendance: place of the child in the family ( $p=0.025$ ); educational level of mother ( $p=0.001$ ); mothers' need for time off work ( $p=0.0003$ ); travelling by car ( $p=0.02$ ); and estimated total time away from home due to attending ( $p=0.0003$ ). Differences in knowledge and attitude between mothers of both groups were not significant, both showing a strong belief in preventative measures. Twenty eight percent of mothers of non-attenders expressed a preference for the G.P. to perform the examination - reasons given were familiarity, convenience and continuity.

Conclusion: Areas where intervention is likely to result in improved attendance are: facilitation of attendance of working mothers and promotion of the developmental examination as a preventative, screening procedure.

**HEPATITIS B IN THE NON-RESIDENTIAL MENTALLY HANDICAPPED POPULATION**

J. Devlin.

Department of Health, Dublin.

This study describes seroprevalence and risk factors for Hepatitis B in seven centres caring for non-residential mentally handicapped individuals. Demographic, medical and behavioural data were collected for all ( $n = 307$ ), while 242 (79%) underwent serological testing. Twenty six (11%) were Hepatitis B seropositive of which 9 (4%) were surface antigen positive. Social class, degree of mental handicap, behaviour profile, Downs Syndrome and abnormal liver enzymes were not associated with serostatus but male sex and increasing age was associated with seropositive status ( $p < 0.05$ ). Fifty six individuals had Hepatitis A testing of which 39 (70%) were seropositive, however Hepatitis A was not associated with Hepatitis B. Immediate family members of those with positive Hepatitis B serology were screened ( $n = 65$ ) of which 15 (22%) had evidence of Hepatitis B markers. Forty one family members were identified where the mentally handicapped individual was surface antigen positive and of these 13 (32%) were seropositive. The prevalence of Hepatitis B in the non-residential mentally handicapped population and their immediate families has implications for preventive measures.

**THE CLUSTER BUSTER - A NEW ROLE FOR THE PUBLIC HEALTH PHYSICIAN?**

L. Daly.

Department of Public Health Medicine and Epidemiology,  
University College Dublin, Dublin.

The problem of disease clusters has always fascinated both epidemiologists and clinicians. Though there are a large number of techniques for detecting the existence of clusters there is little guidance on how to respond to a cluster of health events that is reported by the public to a health agency.

This perception of a cluster by the public is perhaps as important as the existence of a real risk and the objective of the 'cluster buster' is to allay community fears with an appropriate response. However international experience shows that many reported clusters do not represent a real excess and that it is very difficult and expensive to demonstrate a cause-effect relationship with a putative exposure. This paper proposes a triage system for dealing with public reports of clustering and gives guidelines on how to become a successful cluster buster in the Irish situation.

A systematic seven stage process is described with many investigations likely to cease after the first few stages. The stages are, Initial Contact, Preliminary Review, Full Complaint Evaluation, Case Verification, Occurrence Evaluation, Feasibility Study and finally a Major Epidemiological Study.

This approach, with emphasis on communication with the community, should help avoid unnecessary expenditure of scarce resources and accusations of foot dragging or incompetence. Cluster busting is an important public health activity and public health physicians should be aware of its difficulties and pitfalls.

**THE QUICHE PROJECT - QUALITY ASSURANCE OF USER INFORMATICS FOR CHILD HEALTH IN EUROPE**

O. O'Reilly.

Community Care, South Eastern Health Board, Kilkenny.

The QUICHE project is one of the European Commissions'

AIM projects (Advanced Informatics in Medicine), which apply information technology to health care. The project's prime objective is to develop, implement and evaluate a quality assurance programme for preventive child health computer systems. Secondary objectives are: (i) to compare European child health systems, (ii) to identify child health data in other information systems and (iii) to explore telematic options and standards for data transfer and linkage. Six countries, Ireland, Britain, Italy, Austria, Greece and Portugal are collaborating in the project. In the first year the methodology of the quality assurance programme was developed. It used the audit cycle module where, programme indicators are identified, criteria for these are set, the service is performed, the indicators are evaluated against the criteria and necessary changes are identified and implemented, the cycle then repeats.

The indicators identified are either process or outcome. They cover the information technology areas of; standards, databases, software, user satisfaction, confidentiality and security, and the medical areas of; prenatal care, perinatal care, vaccination and surveillance.

In the next two years, this methodology will be applied to a child health computer system that is presently being customised and installed in each country.

**PRESENCE OF HIGH LEVELS OF RADON IN A PRIMARY SCHOOL**

U. K. Tohani.

Southern Health and Social Services Board, Portadown, N. Ireland.

The Department of Environment in Northern Ireland carried out a random survey into the presence of radon levels in public buildings in the province during early 1991. The results showed that the concentration of radon varied from 1.07 Bq/m<sup>3</sup> to 1313.03 Bq/m<sup>3</sup>. The average concentration was between 4 and 690 Bq/m<sup>3</sup>. The highest levels (1313.03 Bq/m<sup>3</sup>) of radon concentrations were recorded in a primary school. The advice of the National Radiological Protection Board (NRPB) suggested that higher radon levels required earlier action. It would seem sensible to act as soon as reasonably practicable and preferably before a further integrated value of 1500 Bq/m<sup>3</sup>, the national average for a lifetime, was received. In any event, after discovering radon levels of 1300 Bq/m<sup>3</sup> the corrective action should be taken within 1.5 years.

However, when the news of high levels of radon became known, it became impossible to adhere to the NRPB guidelines on their suggested time scale to take corrective action. The headlines in the media resulted in extreme parental concern as to the safety of their children. Parents were assured about the safety of their children through the parent/expert meetings and by sharing available information on radon on two occasions. The Education Board moved swiftly to commission corrective action which included installation of an underfloor air extraction system in the building at a cost of £1000. Measurements of radon concentration of 25Bq/m<sup>3</sup> were recorded after taking the corrective steps.

**ASSESSING THE PUBLIC HEALTH IMPLICATIONS OF LAND DISPOSAL OF MEAT**

S. Ryan.

Public Health Department, Midland Health Board, Mullingar.

Following a fire at a meat factory, a neighbouring Local

Authority responded to an emergency request to take fire debris containing meat for disposal in Co. Westmeath. Having supervised the hygiene aspects of quick burial, the Public Health Department initiated an investigation into the relative merits of leaving the meat debris in situ or having it removed to a more suitable location - based on public health considerations. Experience in dealing with this type of environmental problem was lacking both nationally and internationally and a review of the literature was unhelpful. Advice and expertise tapped included the following: public analyst, engineering, hydrogeology, veterinary, pathology, microbiology and toxicology. Surveillance systems included monitoring of the site itself, ground water supplies and local wells, results of which were made available to local residents. Nine months after the disposal, there has been no significant pollution of ground water and no risk to public health. Having examined the matter, we concluded that the decision regarding the ultimate disposition of the meat debris was not driven by Public Health considerations however monitoring needs to continue and the results should be assessed in a systematic way for an undeterminable period in the future.

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#### SMALL AREA ANALYSIS OF LOW BIRTHWEIGHT PATTERNS IN DUBLIN

Z. Johnson, P. Dack, J. Fogarty. Eastern Health Board, Health Information Unit, Dr. Steeven's Hospital, Dublin 8  
Introduction: Birthweight is one of the best available

indicators of perinatal health. This study was designed to examine the incidence of low birthweight in small areas in Dublin and to explore the relationship between low birthweight and socio-economic factors.

Methods: All livebirths for 1986-89 were coded for District Electoral Division (DED), and the percentage weighing under 2.5 kg was calculated for each DED. Those with a significantly above average proportion of low birthweight were identified using 95% confidence intervals, and correlation and forward stepwise multiple regression were used to identify socio-economic factors associated with low birthweight.

Results: DEDs with a significantly raised incidence of low birthweight were identified, mainly in areas with a high proportion of local authority housing including the inner city and the northern suburbs. There was significant positive correlation between the incidence of low birthweight and male unemployment ( $r=0.43$ ), percentage of population in social classes 5 & 6 ( $r=0.44$ ) and proportion of population covered by medical cards ( $r=0.47$ ). Multiple regression showed that the proportion of population covered by medical cards was the best predictor of low birthweight, but it only explained 22% of the total variance.

Conclusions: Low birthweight in Dublin is associated with poverty. A health promotion programme aimed at reducing precipitating factors e.g. smoking should be combined with efforts to raise living standards in disadvantaged areas.