Abstracts

ABSTRACTS

Abstracts from the Viral Workshop 2004: Unfinished business and new challenges, Whakatane, New Zealand.

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This workshop-style conference on the prevention and management of viral hepatitis was held in Whakatane, New Zealand on 21 and 22 May 2004. It was intended for health workers at the primary and secondary care levels. The broad themes of the workshop will be 'unfinished business and new challenges' in hepatitis B and C control and management in New Zealand and the Pacific region.

Visiting speakers included Professor Graham Cooksley from the Royal Brisbane Hospital, Mr James Williams of the U.S. Public Health Service, who is involved in the hepatitis B control programme in Alaska, Dr Greg Dore, of the National Centre in HIV Epidemiology and Clinical Research, University of New South Wales, and Professor Sitaleki Finau, Professor of Public Health at the Fiji School of Medicine. New Zealand speakers will included Hon Tariana Turia (Associate Minister of Health), Professors Ed Gane (Hepatologist, New Zealand Liver Transplant Unit) and John McCall (Hepatobiliary and Transplant Surgeon, Auckland Hospital), Dr Cheryl Brunton (Department of Public Health and Community Medicine, Christchurch Clinical School of Medicine), Dr Clair Mills and Mr Grant Storey of the Ministry of Health, Dr Chris Bullen (Public Health Medicine Specialist, Auckland Healthcare), Mr John Hornell (Chief Executive Officer, the Hepatitis Foundation), and Dr Chris Moyes (Medical Director, Hepatitis Foundation).

The forum included presentations and interactive workshop sessions, and it provided all participants with up-to-date information on the latest developments and current protocols for the control, management and treatment of hepatitis B and C. It will be of particular value to those involved in hepatitis B immunisation programmes or working with chronic hepatitis B or C patients.

For more details and a copy of the programme contact John Hornell at the Hepatitis Foundation, P.O. Box 647, Whakatane 3080, or on freephone 0800 33 20 10, or Johnhornell@hepfoundation.org.nz.

Hepatitis B. Issues for Pacificans

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There is no doubt that hepatitis B is an important causes of morbidity and mortality among Pacificans everywhere. The perpetuation of the problem seems to be related to living conditions, gregariousness of the people, and inadequate services to address the hepatitis B virus, the diseases it generates and the risk factors.

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Pacificans have multiple health problems and hepatitis B is just one of many. The enthusiasm for the latter waxes and wanes with enthusiasts and evangelists with few sustainable efforts to incorporate this important issue to the overall health strategy. What is the disease burden due to Hepatitis B relative to other burdens? The epidemiology of the liver effect of hepatitis B is well covered. However, very little is known about renal and other sequalae of hepatitis B infection.

This paper will address the above issues as well as discuss the issues related to: deficiencies of the health services to deliver appropriately; lack of knowledge and investment by communities an Hepatitis B infection and its sequalae; and suggest some way forward to minimizing the disease burden. After all, the Hepatitis B virus is only a tiny microorganism with no brain.

Epidemiology of hepatitis C in the region

Dr Cheryl Brunton, Senior Lecturer, Public Health, Christchurch School of Medicine and Health Sciences

The epidemiology of hepatitis C in New Zealand is similar to that found in Australia and other "low prevalence" countries. Rates of hepatitis C infection are low in the general population (including blood donors) and high in populations exposed to known risk factors, such as recipients of unscreened blood products and people who have injected drugs. This presentation will summarise prevalence data from New Zealand studies carried out in various populations over the last decade. The information available about the incidence of hepatitis C will also be discussed, as well as studies of the burden of disease attributable to hepatitis C at present and in the future. The extent of the hepatitis C epidemic in New Zealand is already significant and is increasing.

The Hep B Free Programme: Hepatitis B screening and follow-up in Auckland and Northland

Chris Bullen [1,2], Tom Robinson[1]

1 Auckland Regional Public Health Services
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This paper reports on the coverage and results of the Hep B Free programme, a hepatitis B screening and follow-up programme targeting Maori, Pacific and Asian adults conducted between 1999 and 2003 covering the Auckland and Northland regions. 89 839 people were invited to participate and be tested for HBsAg and anti-HBs, and if HBsAg positive for HBeAg, ALT and AFP as well. Data on age, sex, ethnic group was also collected from participants at the time of giving consent. 25% of Maori, Pacific and Asian adults in northern region of New Zealand were screened, 60% of them recruited opportunistically by primary care providers. There were significant ethnic differences in levels of participation and in the prevalence of HBsAg. Overall, 5989 (6.8%) of participants were HBsAg positive, and of these 17.8% were HBeAg positive but these proportions varied with age, gender and ethnicity. People with hepatitis B were more likely to have elevated levels of ALT if they were younger, male and HBeAg positive. More than 90% of people with hepatitis B were counselled and in the following 12 months around 40% of them had a follow-up 'surveillance' test. Among non-immune participants, 52% received a complete course of three hepatitis B vaccinations.

Previous estimates of HBsAg prevalence among Maori and Pacific people from smaller surveys were confirmed and new information obtained about the distribution of hepatitis B virus infection among Pacific Islands and Asian populations in New Zealand.

While this screening programme was not designed to estimate the prevalence of CHB and its complications in high-risk populations in the northern region community it provides the best available description of hepatitis B seroepidemiology within the target groups. There are marked variations between ethnic communities, with implications for disease control and delivery of treatment services. Screening and vaccination coverage was lower than anticipated, and a large number of Maori, Pacific and Asian adults remain unaware of their hepatitis B status and of the possible risks to themselves and others. Infant immunisation remains the cornerstone of control, but consideration should also be given to resourcing additional approaches to reducing the impact of hepatitis B in these high-risk populations.

The New Zealand Hepatitis B Screening Programme: Screening coverage and prevalence of chronic hepatitis B infection

Chris Bullen[1,2], Tom Robinson, Wendy Humphries[3], John Hornell[3], Chris Moyes[3]

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Aim

To report on coverage and the distribution of HBsAg, a marker of chronic hepatitis B virus infection, among participants in the New Zealand Hepatitis B Screening Programme.

Methods

Coverage and crude and age-standardised prevalence rates of HBsAg by age group, sex, ethnic group and region were calculated from data held by the two providers and the New Zealand 2001 Census.

Results

177 000 people were tested for hepatitis B virus infection (51% of the programme targets and 27% of Census 2001 eligible population), with highest coverage among women (28.9%) and Pacific people (34.9%). Overall, 5.7% (10 176) of participants were HBsAg positive and

there were significant regional, ethnic group and gender differences.5.6% of Maori, 7.3% of Pacific people, and 6.2% of Asians were HBsAg positive, and men were more likely to test HBsAg positive (6.1%) than women (5.4%).

Conclusions

Previous estimates of HBsAg prevalence among Maori and Pacific people from smaller surveys were confirmed and new information obtained about the distribution of hepatitis B virus infection among Pacific Islands and Asian populations in New Zealand. Opportunistic screening of adults in these populations should continue in order to identify others with as yet undetected infection, as should regular follow-up of people with chronic hepatitis B virus infection. Ongoing outcome monitoring is now needed to judge whether or not this unique programme has been an effective component of New Zealand's hepatitis B control strategy and a worthwhile investment of resources.

Hepatitis B and C in the Region: Achievements and Unfinished Business

Professor Graham Cooksley, Department of Medicine, University of Queensland, Brisbane, Australia

In the last decade we have seen remarkable progress in our management of the diseases hepatitis B and hepatitis C. In hepatitis B we have universal immunisation at birth and some "catch-up" programs are in existence. The concern of "vaccine escape" mutants is less than originally suggested. High- risk populations (mainly ethnic groups) are readily screened and carriers are assessed appropriately. Screening programs for those with cirrhosis may enable early detection of HCC and treatment of these continues to improve. In hepatitis C the development of better testing has enabled better diagnosis and management of this prevalent disease. Screening of blood and products has minimized post-transfusional hepatitis C. Unfortunately we still lack a vaccine.

Treatment has advanced rapidly where we can now say that with current therapy more than half the population with genotype 1 can be cured and 80% of genotypes 2 and 3 on "intention to treat" analysis. Funding of treatment and programs to ensure compliance are helping to treat patients who have progressive disease. Patients with cirrhosis are entering programs to identify those who need liver transplant or treatment for HCC. In chronic hepatitis B recent trials indicate that pegylated interferons offer the best seroconversion rates for HBeAg positive hepatitis B and control of viraemia and normalization of ALT in HBeAg negative disease. Loss of HBsAg – the best marker of response – occurs in about 7-14% of patients at one year of treatment. The addition of lamivudine does not improve results. Resistance to lamivudine is a major problem and adefovir is becoming more widely used. Resistance is less with adefovir but by year four is 7%. New antivirals such as entecavir and LdT are more effective in terms of viral suppression but not seroconversion. Combinations delay viral resistance but do not improve seroconversion. Loss of HBsAg is rare with antivirals but does occasionally occur. The concept is developing of one or more courses of an interferon and resorting to antivirals only in older patients with more severe disease (cirrhosis). In hepatitis C, trials are in place with protocols to explore higher doses, induction doses, or longer courses in patients with genotype 1. Viramidine seems as effective but less toxic than ribavirin. Treatment of coinfection with HIV and treatment of normal ALT has seen successful trials. We are now seeing the early clinical trials with antiproteases and antipolymerases with varying results. BILN2061 produced a 4 log drop in two days but had unacceptable toxicity. One study with a caspase anti-apoptotic inhibitor has yielded intriguing results. Finally there are encouraging trials to test monoclonal antibodies against envelope proteins in transplantation to prevent reinfection.

Nevertheless, there are still major problems. In hepatitis B we still lack treatments which are effective in everyone. We also have a gap in "catch up" programs for immunisation. HBsAg identification and HCC surveillance programs are not always effective. We hope for eradication of this disease but it may take one or two generations. In hepatitis C we are still troubled by the large social problem of needle sharing and new infections. We still lack a vaccine. Certain subgroups such as post-transplant hepatitis C patients continue to pose a problem. We still need more organ donors. Finally, we need to educate the public better in their attitude to patients with hepatitis B or C. Despite the unfinished business we can afford to be optimistic for continuation of rapid progress.

Public health challenges in hepatitis C

Dore GJ
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An estimated 230,000 people were living with hepatitis C in Australia by the end of 2002. Estimated incidence of hepatitis C has increased from 11,000 in 1997 to 16,000 2001, with 90% of current transmission related to injecting drug use. Over the next 20 years the number of people living with hepatitis C-related cirrhosis is

projected to quadruple from approximately 6,000 to 25,000. Thus, Australia is faced with both an escalating hepatitis C incidence related to inadequate prevention strategies and a rapidly growing burden of hepatitis C-related liver disease.

The failure of current hepatitis C prevention strategies is related to several factors. Prevalence of injecting drug use in the community has doubled over the past decade, placing increasing demand on harm reduction programs. These programs, in particular needle and syringe programs (NSP), were initiated to prevent HIV transmission among injecting drug users. The success of harm reduction programs in prevention of HIV during an era of continued escalation of hepatitis C incidence calls for a re-examination of the scale and nature of current hepatitis C prevention strategies for injecting drug users. However, high hepatitis C incidence is likely to continue in Australia without the development of an effective prophylactic vaccine or a turnaround in the prevalence of injecting drug use within the community. Among the estimated 160,000 people with chronic hepatitis C in Australia only 1,500 to 2,000 are commenced on antiviral therapy per year. Even with further improvements in sustained response rates above the current levels of 40-50% the number of people receiving antiviral therapy will need to expand rapidly in order to reduce the burden of HCV-related liver disease in the community. Specific strategies to limit liver disease burden include: 1) targeting antiviral therapy to those with clearly progressive liver disease (at least stage 2 – moderate hepatic fibrosis); 2) broadening of the practitioner-base to deliver treatment and care to include general practitioners, methadone prescribers, and sexual health clinics; 3) expanded treatment access for marginalised groups, such as current injecting drug users, prisoners, and people with psychiatric morbidity; and 4) further research into alternatives for liver biopsy staging of disease.

The primary aim of screening for hepatocellular carcinoma is to increase survival through earlier diagnosis leading to better cure rates with both surgical and nonsurgical local ablative therapies

Screeening of hepatocellular carcinoma in New Zealand

Assoc Prof Ed Gane, Hepatologist, New Zealand Liver Transplant Unit, Auckland Hospital

In most Western countries, over 90% of hepatocellular carcinomas arise in adults with cirrhosis. In countries with endemic HBV infection, almost 30% of HCC are detected in noncirrhotic HbsAg carriers, usually in children. Therefore, all HbsAg carriers and all cirrhotic patients should be considered for screening provided they have no other comorbidity which would preclude treatment of an identified HCC.

The tests used most frequently to screen for HCC in both HbsAg carriers and cirrhotics are serum alpha foetoprotein (AFP) and abdominal ultrasound. Specificity of AFP is poor - serum levels may also be elevated in pregnancy, and in non-hepatic tumours of the yolk sac, stomach and lung. Also, elevated levels may be seen in 20-50% of patients with acute HBV hepatitis, chronic hepatitis and cirrhosis in the absence of tumour. Transient AFP elevations may parallel ALT, usually not exceeding 500ng/ml.

Increasing the cut-off from 10 to 500ng/ml in HbsAg carriers improves specificity but reduces sensitivity. Identification of sugar-chain microheterogeneity in human AFP, prompted the development of assays with increased specificity for HCC-associated AFP, include lectin-affinity electrophoresis and isoelectric focusing. Unfortunately, these assays are limited by poor sensitivity below 100ng/ml.

The value of screening with AFP alone will always be limited by poor sensitivity - almost 25% of HBV-related and HCV-related HCCs never produce this protein. Lack of sensitivity has also limited the applicability of assays for other tumour markers (des_-g-_carboxy prothrombin, serum CA242).

Because thrombopoietin production falls in advanced viral cirrhosis, the absolute platelet count may be an important surrogate marker of risk of HCC. In a recent series, more than 50% of cirrhotic patients with initial platelet counts less than 60 developed hepatoma within 3 years.

Abdominal ultrasound may detect tumours as small as 1cm, distinction from regenerative nodules in a cirrhotic liver remains difficult. However, compared to AFP, ultrasonography has increased sensitivity and specificity for detection of HCC in HbsAg+ carriers.

Recent studies suggest that a combination of serum alpha fetoprotein levels and abdominal ultrasound is a more accurate means of screening. Because the mean doubling time for HCC is 200 days, screening should be performed at least 6 monthly. However, such a screening protocol would cost approximately $6.6 million per annum if all 12,000 carriers identified to-date by the National HBV screening programme were recruited into follow-up. By stratifying according to estimated risk

(ultrasound for those with cirrhosis or family history of HCC), these costs have been reduced by 90%.

The primary aim of screening for hepatocellular carcinoma is to increase survival through earlier diagnosis leading to better cure rates with both surgical (transplantation or resection) and nonsurgical local ablative therapies (TACE, ethanol injection and RFA). Previous studies of HCC surveillance in areas of endemic HBV infection have yielded conflicting results of the benefit of surgical resection of screen-detected tumours., Although a recent study in China showed no survival benefit, this was confounded by poor accessibility to surgical facilities. In a large uncontrolled screening programme of Alaskan Eskimos, screening for HCC was associated with a five and ten year survival of 42% and 30% respectively, compared to a 0% prior to the introduction of screening. The recently published Milan study, which included resection and transplantation as treatment options, observed improved survival in a cohort of screened patients compared to historical controls. Cost-effectiveness in these studies ranged between $12 and $18,000 per treatable HCC identified and between $25 and 50,000 for each year of life saved.

To date, almost 50 hepatomas have been detected through the National screening programme, of which >80% were less than 5cm and potentially curable. Survival appears longer in screen-detected compared to incidental tumours, despite considerable lead-time bias. However, survival benefit from screening can only be confirmed by a prospective randomised controlled trial comparing screening to no screening, which is unlikely to happen, given ethical concerns around such a study design.

Developments in treatment of chronic hepatitis B and C

Assoc Prof Ed Gane, Hepatologist, New Zealand Liver Transplant Unit, Auckland Hospital

Recent advances in the management of HCV

An estimated 30,000 New Zealanders have chronic hepatitis C infection, of whom 5-10% will eventually die or require transplant for hepatocellular carcinoma or complications of cirrhosis. Eradication of infection by antiviral treatment is the only means of reducing morbidity and mortality associated with HCV. Recent dramatic improvements in efficacy and tolerability of antiviral therapy against HCV mean cure is now a realistic goal for most patients.

Interferon-a monotherapy

Interferon-a (IFN) is a naturally occurring cytokine with potent antiviral, immunomodulatory and antiproliferative properties. As a human protein, IFN must be administered by either subcutaneous or intramuscular injections. The major adverse effects are flu-like symptoms, weight loss and depression. Depression occurs in 10-25% of patients and is secondary to CNS synaptic depletion of serotonin. Pre-emptive therapy with SSRI such as fluoxetine, paroxetine, or citalopram may improve tolerability and enable the completion of therapy. Any patient with a history of previous self-harm or psychosis should have a psychiatric review regarding their suitability for treatment. Other relative contraindications to IFN therapy include decompensated cirrhosis, untreated thyroid disease, poorly controlled epilepsy, severe psoriasis and continued heavy alcohol or IV drug use.

Unfortunately, most patients relapse after standard interferon monotherapy and less than 15% achieving sustained eradication of viraemia (cure). By preventing relapse after interferon withdrawal, ribavirin increases cure rates to almost 40 per cent. The most frequent adverse effect of ribavirin is dose-limiting haemolysis, which necessitates close monitoring throughout treatment. Several non-haemolysing analogues of ribavirin are under development, including viramadine (liver-targeting prodrug), and other IMDPH inhibitors (mycophenylate, VX497).

The addition of polyethylene glycol moieties to interferon reduces renal excretion thereby allowing weekly administration and preventing wide fluctuations in serum interferon levels associated with adverse effects and viral breakthrough. Combination Pegylated IFN plus ribavirin increases cure rate to over 60% overall and to 80% in patients infected with HCV genotypes 2 and 3. Retreatment with this combination may cure 10-50% previous nonresponders or relapsed responders, with best results in Genotype 2 and 3 patient and those previously treated with interferon alone.

Oral molecular antiviral agents

More than 20 molecular antiviral agents are in preclinical and clinical studies, the most advanced of which are the inhibitors of HCV NS3 helicase and NS5B RNA-dependent RNA polymerase. Potential advantages include oral administration, lack of adverse effects and potent antiviral effect independent of genotype.

Recent advances in the management of HBV

Approximately 70,000 New Zealanders have chronic hepatitis B infection from early horizontal transmission, of whom 10% will have active liver disease and if untreated, will eventually die or require transplant for complications of cirrhosis. Antiviral therapy is indicated in any HBsAg-positive patient with elevated ALT plus

evidence of active HBV replication (either HBeAg positive or high level of serum HBV DNA). The aim of antiviral therapy is therefore long-term suppression of HBV replication in order to prevent progression to cirrhosis and prolong survival.

Until 2000, standard interferon-a was the only available therapy for CHB. This was limited by poor tolerability and efficacy. In addition, most New Zealanders are infected with HBeAg-negative CHB, which does not respond to this therapy.

Unlike interferon-a, Lamivudine is oral, well tolerated with few side effects and contraindications. Treatment duration in HBeAg-positive patients is until HBeAg is not detectable on two tests 6 months apart (usually one to four years), while HBeAg-negative patients require long term therapy. Unfortunately the efficacy of prolonged therapy is limited by emergence of lamivudine resistant HBV mutants - 15% at 1 yr, 65% at 5 yrs. Recently, adefovir dipovoxil was approved for rescue treatment for lamivudine-resistance. Several other nucleoside analogues are being developed, the most promising of which is Telbivudine (LdT), which has more than 10,000 times the antiviral potency of lamivudine.

Future antiviral strategies against HBV are likely to include either combination of multiple molecular antivirals or combinations of molecular antivirals with immunomodulators, such as pegylated IFN, or peptide or DNA therapeutic vaccines.

In summary, chronic hepatitis B and chronic hepatitis C affect over 100,000 New Zealanders and accounts for almost 95% of liver-related mortality. New antiviral therapies will prevent progression to cirrhosis in most patients. Therefore, earlier diagnosis and increased availability of antiviral therapy through better funding, education and clinic resources should improve both survival and quality of life for those infected with either HBV or HCV. Prevention of new infections through vaccination (HBV), education and public health measures (HCV) remains a priority.

Preliminary results of a two-year chronic HBV follow-up programme

John Hornell, Chief Executive Officer, The Hepatitis Foundation, Whakatane

By the conclusion of its component of the targeted hepatitis B screening programme in June 2002, the Hepatitis Foundation had commenced follow-up of 5,245 carriers. The follow-up programme includes persons identified in the 1999-2002 screening programme along with those enrolled from earlier, mostly pre-vaccination, screening programmes. By April 2004, the number actively enrolled had increased to 6002. The Foundation also follows up over 100 hepatitis C clients. The programme is coordinated by the Foundation's staff in Whakatane, where the programme database is located, and where contact is maintained with clients and their nominated healthcare providers.

Compliance: In the first seven quarters of the programme, 13,179 rounds of testing were carried out. Just over half (6,958) of these tests involved samples collected by our nurses and phlebotomists on home visits throughout the North Island. The average frequency of testing was 1.3 test rounds per client per annum. In the first year of the programme, 85 percent of enrolled clients received at least one set of tests and 45 percent received at least two sets.

Results: To date, the average prevalence of ALT elevation above 60IU/L on at least 3 consecutive tests is 16.7% of clients, with an average 2.3% showing AFP elevated above 25 ug/L.

Benefits: The aim of the programme is to ensure timely referrals for treatment. While this is certainly happening in numerous cases, assessment of the benefits of the programme in terms of improved treatment outcomes must await further experience.

Treatment of Hepatocellular Carcinoma

John McCall, Hepatobiliary and Transplant Surgeon, New Zealand Liver Transplant Unit, Auckland City Hospital.

Hepatocellular carcinoma (HCC) usually develops on a background of chronic liver disease. The treatment options and prognosis depend on the cancer stage at the time of diagnosis and the severity of the underlying liver disease.

Liver transplantation, liver resection, and tumour ablation (using radiofrequency or ethanol injection) can all achieve tumour eradication. Liver transplantation achieves the highest rate of cure for patients with 1-3 tumours, not larger than 5cm, and no evidence of extra-hepatic spread. Liver transplantation is limited by the availability of donor organs. Liver resection can also achieve satisfactory results if the underlying liver function is well preserved and the tumour is technically resectable. Unfortunately there is a significant incidence of new lesions developing in the liver remnant over time (anti-viral therapies may have a role in secondary prevention but this is not yet proven). Ablation is an alternative treatment for small tumours in patients who are not resection or transplant candidates. Ablation

has the advantage of being able to be administered percutaneously.

When tumour eradication is not feasible, palliative treatment is considered. Trans-arterial chemo-embolisation (TACE) has been shown to improve survival in those with reasonable hepatic reserve (Child's A or B). Selective internal radiotherapy may be expected to achieve similar results but has not been tested in a randomised study. Systemic chemotherapy is not every effective against HCC and is poorly tolerated in patients with liver disease. There are no other proven effective therapies for HCC but good supportive care is clearly important.

Finally, the opportunity should not be overlooked to ensure that other family members who may be at high risk for developing HCC (HBV carriers plus positive family history) are offered appropriate advice about screening. Early diagnosis is essential for a good treatment outcome.

Epidemiology of hepatitis B

Chris Moyes

Early descriptions of infection patterns of hepatitis B were from Northern Europe and North America, and emphasised acute hepatitis in adults, transmitted predominantly by sexual and intravenous contact. Subsequent marker prevalence studies showed that in most of the world, including all the indigenous peoples of the Pacific rim, most of the population were infected in childhood; symptomatic acute infection was indicative of a vigorous immune response and most typical of infection in older children and adults. The reservoir of infection was the pool of chronic carriers. The carrier state usually resulted from infection in early childhood either from the mother at birth, or from family and playmates through skin sores and grazes, either by direct contact or from contaminated dust, eg in playgrounds. In most societies carrier rates exceeded 5%. Variations depended on skin exposure and intimacy of body contact.

Studies in New Zealand confirmed that Maori fitted the typical pattern of endemic infection, but in areas where there was considerable social mixing of young children of different ethnic groups chronic infection was also occurring in European children at a lower rate.

Subsequent to universal infant vaccination programs rates of chronic carriage and its complications have dropped dramatically in children, with secondary reduction in adult acute hepatitis.

The challenges for the future are

- To manage the large number of existing chronic carriers
- To ensure full effective immunisation of all children
- To monitor vaccine resistant viral strains and modify vaccines accordingly

Viral Hepatitis Workshop 2004: "Unfinished business and new challenges"

Nicholette Pomana – Maori Advisor, National Immunisation Programme, Public Health Directorate, Ministry of Health

Hepatitis on an international level continues to be a worldwide concern in Aotearoa / New Zealand we also cannot afford to be complacent in terms of our own Hepatitis rates in particular for diseases like Hep B which are preventable but continue to occur.

The burden of vaccine-preventable diseases like Hep B tend to be inequitably distributed, falling heavily on Maori, Pacific and low socio-economic populations. Addressing the health needs of those that are disadvantaged is recognised within the NZ Health Strategy (King, 2000). The strategy also acknowledges the special relationship between the Crown and Maori as Tangata Whenua under the principles of the Treaty of Waitangi.

Within the NZ Health Strategy the strategies which relate to immunisation such as; reducing the incidence and impact of infectious diseases, reducing inequalities in health, improving access to appropriate services and Maori development in health and better physical health are also reflected in the programmes strategic priorities. The Primary Care Health Strategy and He Korowai Oranga (Maori Health Strategy) also identify immunisation as a key health gain and strategy toward improving the health of Maori.

The overall goal for the programme is to improve the health of all New Zealanders by controlling or eliminating vaccine-preventable diseases. The programmes implementation priorities are to:

- Implement the National Immunisation Register as a tool to support the immunisation sector
- Achieving a significant reduction in Meningococcal B disease by introducing the MeNZB vaccine
- Improve access to immunisation services in primary

care and outreach settings to reduce inequalities in immunisation coverage

• Develop effective communication and promotion strategies for immunisation

In support of these priorities activities such as disease coverage surveillance, development of sustainable funding strategy, policy development, technical advise and workforce development, research and evaluation.

The economic costs of hepatitis C virus infection in NZ

Ian Sheerin

Hepatitis C virus (HCV) is at epidemic proportions in NZ. Approximately 85% of HCV infections are thought to have been contracted from intravenous drug use. In future, there will be costs incurred in the form of treatment, diagnostic tests, liver transplantation, human suffering and reduced life expectancy.

Future costs of HCV to the health system in NZ were modelled using techniques from health economics.

Future costs of HCV are estimated to vary from $10.3 million per 1000 (for non-Mäori men) to $11.2 million per 1000 (for non-Mäori women)(3% discount). For Mäori, future costs are lower than for non-Mäori, reflecting lower average life expectancy. The largest component of future costs of HCV infection will be treatments for liver cirrhosis and liver transplants.

Cost-effectiveness of treatment for HCV could be improved by improving access to treatment and also by commencing treatment at a younger age. As the majority of HCV infections are associated with injecting drug use, improving access to methadone treatment is an important component. Cost-effectiveness is estimated including the costs of methadone treatment.

The Program a study of the effectiveness of hepatitis A vaccine in infants that demonstrates that this vaccine can effectively be given to children in endemic areas such as Indian Country at

Cost-effectiveness is well within conventionally accepted guidelines, estimated at a cost per year of life saved of $25,000 for non-Mäori , and $16,000 for Mäori. Costs of treatment per year of life saved are lower for Mäori for both men and women, largely because treatment has more effect in increasing life expectancy among Mäori.

Although this research indicates that treatment is cost-effective in terms of saving life, the evidence indicates that current treatments for HCV will have only limited effects in reducing future health costs that will be incurred from more severe liver disease, such as liver cirrhosis.

Progress on the Action Plan

Mr Grant Story, Ministry of Health

The release of Action on Hepatitis C Prevention was an important step in answering the strong and ongoing demand for action on preventing hepatitis C. With today's high safety standards associated with our blood and blood products, the risks of transfusion-transmitted infections in New Zealand are extremely low. The greatest risk for transmission of hepatitis C is through blood-to-blood contact involved with injecting drug use. The action plan shows what has to be done in order to reduce both the transmission and the personal and social impacts of hepatitis C. Many of the action points in the plan focus on the need to actively involve affected communities and health service users in developing and delivering their own prevention programmes by building their capability and capacity.

Ten Years of Surveillance and HCC in Alaska

Mr James Williams

Since its beginnings, in 1982, the Viral Hepatitis Program has reached all the high-risk villages in Alaska and has the potential for eradicating hepatitis' B. By 1988, the majority of Alaska Natives were immunized against hepatitis B, if not previously infected. More than 96 percent of Alaska Native newborns receive a dose of hepatitis B vaccine before hospital discharge. The annual incidence of acute symptomatic hepatitis B infection has decreased from 215 per 100,000 prior to 1982, to < 2 per 100,000,more than a 100 fold decrease. The 1-year case-fatality rate for primary liver cancer has decreased from 100 percent to 50 percent, and significant 10-year survival of liver cancer from early detection has been documented. Liver function tests were added to the semiannual screening test for liver cancer (AFP) to identify patients with severe asymptomatic hepatitis who could be candidates for newly licensed antiviral medications to prevent end stage liver disease and need for subsequent liver transplantation. In FY 02, 217 persons with elevated liver enzymes with hepatitis B were identified and 17 have been found to have very active disease and are being treated or evaluated for antiviral therapy.

Since 1989, the Program has conducted studies on the immunogenicity, safety and efficacy of hepatitis A vaccine in infants and adults. In 1993 the program, in collaboration with the State of Alaska and four regional Native health corporations, conducted a project that demonstrated that one dose of hepatitis A vaccine could halt a large outbreak of hepatitis A. The Program a study of the effectiveness of hepatitis A vaccine in infants that demonstrates that this vaccine can effectively be given to children in endemic areas such as Indian Country at 1 year of age. Other recent accomplishments include initiation of studies on hepatitis B boosting and long-term immunogenicity of hepatitis A vaccines, and the development of a cancer detection program for persons chronically infected with hepatitis C. The latter has involved development of a registry of persons with hepatitis C, currently approaching 1300 Alaska Natives, and, in FY 02 completed a program that screened Alaska Natives at high risk for hepatitis C (persons who received blood transfusions or had cardiac surgery prior to 1992), demonstrating the potential feasibility of such a public health program for other managed care programs. The program has contacted the Hepatitis C infected persons twice yearly for AFP testing to detect liver cancer early and liver function tests to identify potential treatment candidates.

This workshop-style conference on the prevention and management of viral hepatitis was held in Whakatane, New Zealand on 21 and 22 May 2004. It was intended for health workers at the primary and secondary care levels. The broad themes of the workshop will be 'unfinished business and new challenges' in hepatitis B and C control and management in New Zealand and the Pacific region.

Visiting speakers included Professor Graham Cooksley from the Royal Brisbane Hospital, Mr James Williams of the U.S. Public Health Service, who is involved in the hepatitis B control programme in Alaska, Dr Greg Dore, of the National Centre in HIV Epidemiology and Clinical Research, University of New South Wales, and Professor Sitaleki Finau, Professor of Public Health at the Fiji School of Medicine. New Zealand speakers will included Hon Tariana Turia (Associate Minister of Health), Professors Ed Gane (Hepatologist, New Zealand Liver Transplant Unit) and John McCall (Hepatobiliary and Transplant Surgeon, Auckland Hospital), Dr Cheryl Brunton (Department of Public Health and Community Medicine, Christchurch Clinical School of Medicine), Dr Clair Mills and Mr Grant Storey of the Ministry of Health, Dr Chris Bullen (Public Health Medicine Specialist, Auckland Healthcare), Mr John Hornell (Chief Executive Officer, the Hepatitis Foundation), and Dr Chris Moyes (Medical Director, Hepatitis Foundation).

The forum included presentations and interactive workshop sessions, and it provided all participants with up-to-date information on the latest developments and current protocols for the control, management and treatment of hepatitis B and C. It will be of particular value to those involved in hepatitis B immunisation programmes or working with chronic hepatitis B or C patients.

For more details and a copy of the programme contact John Hornell at the Hepatitis Foundation, P.O. Box 647, Whakatane 3080, or on freephone 0800 33 20 10, or Johnhornell@hepfoundation.org.nz.

Science is not to be regarded merely as a store house of facts to be used for material purposes, but as one of the great human endeavours to be ranked with arts and religion as the guides and expression of man's fearless quest for truth
(Sir Richard Arman Gregory 1864-1952)

The importance of seat restraints: a short annotated bibliography

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Abstract: *This annotated bibliography paper will address road traffic injuries and how the improper use of seat restraints contribute to road traffic injuries in children and adults. (PHD 2004 Vol 11 No 1 Pages 132 - 135)*

Introduction

Road traffic injuries are now seen to be a major and leading cause of morbidity and mortality globally and more so in the low and middle income countries. The World Health Organization (WHO) has estimated that at least 3000 people are killed daily in road traffic crashes globally with 30,000 others injured or disabled[1]. In low and middle income countries this accounts for 85% of deaths and 90% of DALYS (disability adjusted life years) lost globally. Globally, the costs of road injuries are estimated to be about $US158 billion annually.

Motor vehicle crashes can result from a variety of factors ranging from inadequate roadway design, hazardous conditions, improper and/or failure to use safety devices such as helmets and seat belts, lack of appropriate vehicles and vehicle maintenance, unskilled or inexperienced drivers, inattention to pedestrians and cyclists, problems related to road sharing, impairment due to alcohol use or fatigue and other factors. These factors however can be amenable to change or prevented as seen by trends in high income countries[1].

In the Pacific region there is still lack of proper data and local research to estimate these occurrences and much work is definitely needed in this area. A recent study in Fiji conducted by WHO showed that road accidents were the second cause of death for people between the ages of 5-29 and the third cause of death for people between the ages of 30-44, representing the group of people who most actively contributed to national economies[2]. This annotated bibliography paper will address road traffic injuries and how the improper use of seat restraints contribute to road traffic injuries in children and adults.

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Muszynski CA, Yoganandan N, Pintar FA, Gennarelli TA, (2005). Risk of paediatric head injury after motor vehicle accidents. *Journal of Neurosurgery,* 102(4), 374-379.

The authors here analyzed the correlation between the relative risk of paediatric brain injury and the use of child safety seats (CSSs). Data was obtained from the national motor vehicle accidents (MVAs) database looking at four categories of children –infant, toddler, young child and adolescent and four restraint categories – unrestrained, properly restrained, improperly restrained, and other. Evaluation was done on children with no injuries and children with moderate to severe head injuries using the Abbreviated Injury Scale (AIS). The authors found that their data confirmed that proper use of CSS substantially increased the likelihood of not sustaining head injury in an MVA and the findings were most dramatically seen in infants where the likelihood of sustaining no injuries for unrestrained infants was 15.2% as compared to 92.8% for properly restrained infants. So they concluded that a CSS is most protective for infants and toddler categories and improvements in CSSs can reduce the risk of moderate to severe head injuries in children of all age categories.

Petridou E, Skalkidou A, Lescohier I, Trichopoulos D, (1998). Car Restraints and Seating Position for Prevention of Motor Vehicle Injuries in Greece. *Arch Dis Child,* 78, 335-339.

The authors, researchers from Athens University Medical School and the Harvard Injury Control Center in Boston, Massachusetts used a population based case control study on 129 children ages 0-11 years to evaluate the protective effect of child restraint and relative safety of front and rear seating in a population where children often travel unrestrained. Their results suggested that in Greece about two thirds of all childhood injuries from car crashes could have been avoided through the regular use of a car restraint. Their data also indicated that in the absence of a child restraint system, a rear seating position conveyed substantial protection and could explain the low mortality of children as car passengers in Greece. Their findings confirmed the universal and proper use of child restraint systems as the ultimate