Hepatitis & health: A survey of high school students in New South Wales

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Hepatitis & Health

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Introduction

This report details the findings of a survey of Year 9 and Year 11 students attending New South Wales public high schools. The survey was undertaken by the National Centre in HIV Social Research (NCHSR) at the University of New South Wales in collaboration with the Australian Research Centre in Sex, Health and Society (ARCSHS) at La Trobe University.

The survey formed part of the Hepatitis and Health project, funded by the New South Wales Health Department and the Commonwealth Department of Health and Aged Care. At the same time, personnel from the New South Wales Department of Education and Training conducted another project which developed appropriate curriculum support materials for secondary schools related to hepatitis.

The aims of the Hepatitis and Health Project were:

- To review the relevant literature on hepatitis and health, particularly as it relates to hepatitis C and the current policy environment (ie the policy environment which pertained during the first half of 2000).
- To determine high school students' knowledge and understandings of hepatitis B and C, principally as they relate to self-perceptions of risk.
- To contribute to the development of a framework and appropriate teaching/learning materials for the inclusion of hepatitis education within high school programs.

The intended outcomes of the Hepatitis and Health Project were:

- Evidence of high school students' knowledge (or lack thereof) of hepatitis.
- Indicators of high school students' needs in relation to hepatitis education.
- Recommendations concerning how students' needs might begin to be met.

Grateful acknowledgment is expressed to all those who made the survey possible, especially the school personnel who administered the questionnaire in their hectic schedule and the students who provided the data, much of it of a highly personal nature.

Literature Review

Hepatitis C

The hepatitis C virus (HCV; previously known as non-A, non-B hepatitis) was identified in 1988. As its name suggests, HCV causes disease of the liver. People infected with the virus are likely to remain asymptomatic for many years after infection. However, it appears that many will go on to experience symptoms within 15 to 40 years of becoming infected with the virus. A small but significant proportion of these people will develop cirrhosis or cancer of the liver.

Due to the relatively recent isolation of the virus, knowledge concerning the aetiology of HCV is incomplete and changing. It is known that HCV mutates rapidly and various types of HCV have been identified world-wide. This means that an individual can be infected by several types of HCV. The existence of multiple HCV types may have serious implications for detection and treatment. Whereas methods for detection have improved considerably since the earliest antibody tests, treatment options and outcomes remain limited.

Understanding of the transmission of HCV is still developing. It is known that HCV is transmitted via blood-to-blood contact. Unlike HIV, only limited amounts of HCV are found in seminal and vaginal fluid and sexual transmission appears to be extremely uncommon[1]. However, while transmission is limited mainly to blood-to-blood contact, HCV is transmitted very easily. This is for two key reasons. First, the virus is particularly small—an amount sufficient for infection can be conveyed in a quantity of blood so small that it is undetectable in day-to-day settings. Second, the virus is particular hardy—it can remain infectious outside the body for some time, perhaps as long as several months. (For a detailed discussion of the hepatitis C virus see Dolan 1997).

[1] The risk of sexual transmission is believed to be heightened when an individual's immune system is compromised, most notably due to HIV infection.

Groups currently affected by HCV

The transmission of HCV through blood-to-blood contact suggests a number of key routes of transmission and groups of individuals who are, or have been, at particular risk of infection. The majority of people currently infected with HCV have a history of injecting drug use. For some of these people infection may date back to the 1970s, for others infection may be very recent. Also affected are people who received blood products prior to the introduction of screening for HCV in February 1990 in Australia and immigrants who were exposed to HCV through contaminated blood in other countries. Needle stick injuries account for HCV infection among some health workers. Unsterile tattooing and piercing, as well as sharing of personal hygiene products such as toothbrushes and razors, are also believed to be responsible for HCV transmissions.

Australia has not experienced a HIV epidemic among injecting drug users like those seen in Europe and North America. This has been credited largely to the timely introduction of needle and syringe programs (NSPs). However, over the years during which HIV/AIDS-related harm minimisation strategies successfully promoted safer injecting practices, Australia's drug injecting population continued to be infected by HCV. A number of explanations for this have been offered, including the bigger pool of HCV infection compared with HIV (Crofts et al. 1999). It has also been shown that the needle and syringe cleaning methods promoted to prevent HIV infection are not always sufficient to destroy HCV. Whereas this may account for some HCV infections, the high take up of NSPs (and the concomitant reduction in the use, passing on and receiving of previously used needles and syringes) (NCHECR 1999) suggests other routes of transmission. In light of the small quantity of blood involved in HCV transmission and the virus' prolonged survival outside the body, it seems that other equipment used (eg. swabs, spoons, filters, tourniquets and the 'mix' itself) and practices engaged in during the injecting process may well be implicated in the continuing transmission of HCV. As such, it is evident that existing HIV/AIDS-related harm minimisation strategies for people who inject drugs are insufficient to prevent the transmission of HCV (Lowe & Cotton 1999).

Prevalence and incidence of HCV in Australia

Recent estimates suggest that between 200,000 and 250,000 Australians have been exposed to HCV (AHMAC 1995; Lowe & Cotton 1999; Ministerial Council on Drug Strategy 1998). During the period 1994–1998 over 95,000 diagnoses of HCV were recorded across Australia, an average of over 19,000 diagnoses a year[2] (NCHECR, 1999). While this indicates the prevalence or total known infections to date of HCV, it does not ascertain the incidence—the rate at which people have been exposed. It is estimated that there were approximately 11,000 new HCV infections during 1999 (Lowe & Cotton 1999). Although the prevalence of HCV is increasing, it has been suggested that the incidence of HCV is now levelling off (Macdonald et al. 2000).

[2] The actual figure for 1998 was 18,474 (NCHECR 1999).

Estimates concerning the distribution of HCV infections vary across studies and over time. Nevertheless, it is generally agreed that people who inject/have injected drugs account for the majority of all HCV infections in Australia and that injecting drug users face the greatest ongoing risk of infection[3]. During 1995 it was estimated that half of all HCV infections were accounted for by injecting drug use and that between 60 and 80 per cent of all injecting drug users were exposed to the virus (AHMAC 1995). More recent estimates suggest that injecting drug use accounts for between 75 and 80 per cent of all HCV infections (Lowe & Cotton 1999) and that between 50 per cent (Lowe & Cotton 1999) and 60 per cent (Ministerial Council on Drug Strategy 1998) of all current injecting drug users have been exposed. Of those injecting drug users who have not been exposed, a further 13 per cent are thought to become exposed to HCV each year (Ministerial Council on Drug Strategy 1998).

Prevalence and incidence statistics for people who inject drugs tend to be derived from populations attending some sort of drug-related service, in particular needle and syringe programs (NSPs). The specific features of those populations who commonly use these services may limit data generalisability. Nevertheless, findings from studies undertaken within service settings offer the most accurate available data on HCV prevalence and incidence among current injecting drug users. During 1998 only 1.5 per cent of injecting drug users attending NSPs across Australia tested positive for HIV whereas 49 per cent tested positive for HCV. Prevalence of HCV is not spread evenly across the country. NSW has continued to have a substantially higher prevalence of HCV than other states and territories, with 69 per cent of injecting drug users attending NSPs in NSW testing positive for HCV during 1998. See Figure 1. (NCHECR 1999).

[3] This is not to overlook other groups who are affected by HCV. Notably, many people living with blood disorders were infected with HCV prior to the introduction of blood product screening . It has been suggested that around 80% of people whose treatment for haemophilia predates blood screening are infected with HCV. Also, older people who migrated from South East Asia and parts of the Middle East represent a large proportion of those currently affected by HCV-related disease.

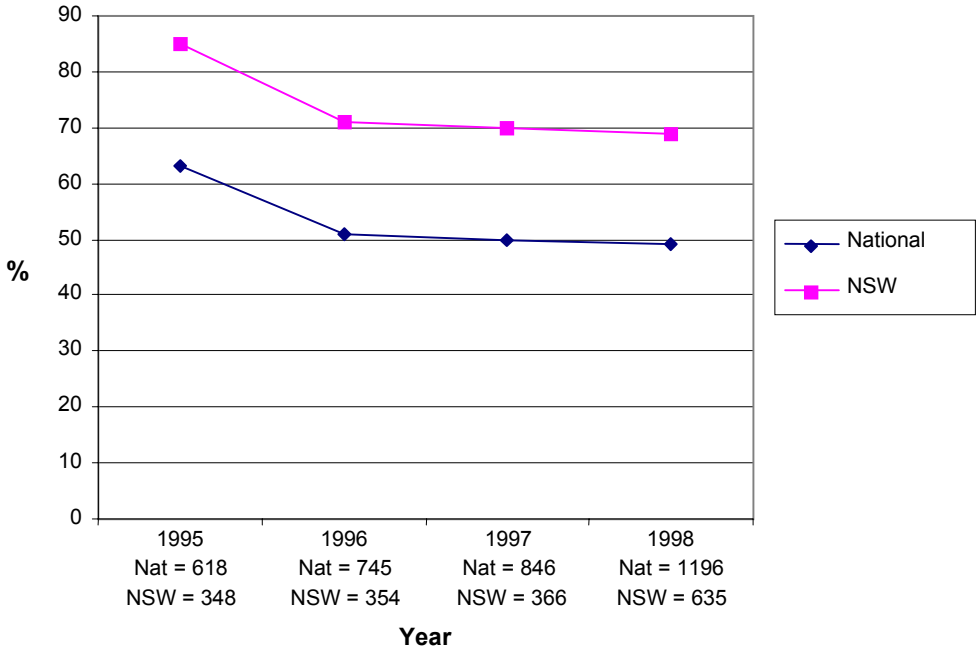

Figure 1 Injecting drug users testing positive for HCV within needle and syringe programs

Adapted from the 1999 HIV/AIDS, Hepatitis C and Sexually Transmissible Infections Annual Surveillance Report, Table 4.1.1 (NCHECR 1999).

Transmission of HCV is particularly high within prisons. The proportion of prisoners who have histories of injecting drug use (estimated at around 50 per cent in NSW: Cregan 1998) along with the limited treatment options for injecting drug users inside prisons and the re-use of injecting equipment within prisons are implicated here. In this context the re-use, sharing of injecting equipment is common and risk of infection with HCV and other blood-borne viruses is heightened considerably. This is exacerbated by the lack of facilities for adequate sterilisation of injecting equipment. In addition, unsterile tattooing practices are common in prisons. One study of HCV prevalence among prisoners in NSW found that 30 per cent of men and 60 per cent of women were HCV positive on entry to prison. Given the risk of HCV transmission within prisons, it was speculated that an increased proportion of the same cohort of prisoners would test positive for HCV on exit from prison (Cregan 1998).

Only limited data are available pertaining to the prevalence of HCV among Aboriginal and Torres Strait Islander communities. It has been noted that HIV infections as well as injecting drug use within these populations are increasing. In addition, it is recognised that there is significant over-representation of Indigenous people within prisons (ANCARD 1997). These factors suggest that members of these communities are likely to face increased risk of exposure to HCV.

Much discussion of HCV infection amongst injecting drug users focuses on those people who are symptomatic and are being diagnosed with HCV many years after infection was likely to have taken place. By extension, many of these people are older injecting drug users or

people whose injecting drug use ceased many years ago. This group of people accounts for a substantial number of the new HCV diagnoses each year. Yet it seems that new HCV infections amongst people who inject drugs may be concentrated in younger people.

Surveillance reports suggest that rates of HCV diagnoses among 15 to 19 year olds are increasing rapidly. During 1994 only 2 per cent of all HCV diagnoses concerned people in this age range. By 1998 this figure had increased to 7.6 per cent (see Figure 2), or 1,401 of 18,474 cases. While this remains a small proportion of overall diagnoses, the continued growth in this age group's proportion of diagnoses is cause for concern.

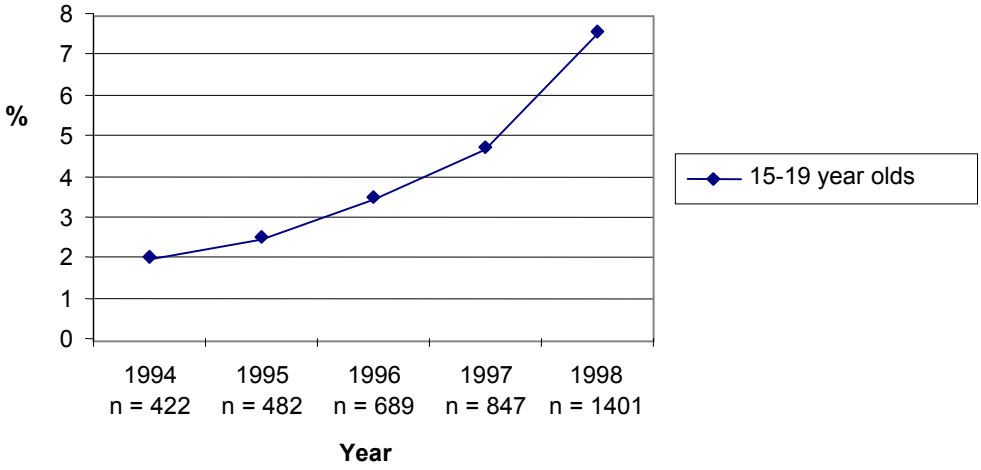

Figure 2. 15-19 year olds' proportion of HCV diagnoses

Adapted from the 1999 HIV/AIDS, Hepatitis C and Sexually Transmissible Infections Annual Surveillance Report, Table 2.1.6 (NCHECR 1999).

A study within one NSP located in inner-urban Sydney found that clients under 20 years of age had a higher incidence of HCV than older clients. Indeed, the under 20s were five times more likely to be exposed to HCV during the study period than 20 to 29 year olds. The discrepancy is even greater when compared with clients aged 30 years and over (van Beek et al. 1998). This suggests that, among users of this service at least, young injecting drug users are engaging in risk practices within social networks where HCV is prevalent[4]. The prevalence of HCV in adult prisons is reflected, albeit at reduced levels, within juvenile justice centres. A recent study of HCV prevalence within a Victorian juvenile justice centre found that 21 per cent of detainees aged 15 to 17 years had been exposed to HCV. All of these young people had histories of injecting drug use (Burrows 1999).

[4] It is possible that these infections are among members of a particular milieu.

YOUNG PEOPLE AND INJECTING DRUG USE

Injecting drug use is now the key route of transmission of HCV and young people who inject drugs appear to be at particular risk of infection. The Australian Institute of Health and Welfare's (1999) National Drug Strategy Household Survey findings for 1998 suggest that 2.1 per cent of the population have injected drugs at some time during their lifetime. The average age of first injecting was 20.7 years. However, the 1998 survey also found that 1.6 per cent of 14 to 19 year olds had injected drugs at some time, with 0.7 per cent having injected recently. While this is a small proportion of all 14 to 19 year olds, it is estimated that this translates into some 12,100 14 to 19 year olds in the total population. Amphetamines were the most commonly injected drug, followed by heroin. Furthermore, the survey also found that 51.1 per cent of 14 to 19 years olds had used illegal drugs at some time and that 37.7 per cent (an estimated 611,400 persons) had done so recently. Whereas the non-intravenous administration of illegal drugs by no means predicts future injecting drug use, the high level of illegal drug use among young people does suggest that using illegal drugs is a common part of life for many young people.

A survey of Year 10 and Year 12 secondary school students found that just over two per cent of students reported having injected drugs at some time (Lindsay et al. 1997). The average age of first injecting was 14 years (Lindsay et al. 1999). Furthermore, students who reported being sexually attracted to people of the same sex were notably more likely to have injected drugs than their counterparts who reported exclusively heterosexual attraction (Smith et al. 1999) (see Figure 3). Injecting drug use appears to be substantially more common among students attending TAFE. Recent figures suggest that 8 per cent of men and 6.9 per cent of women attending TAFE have injected drugs at some time. Of these, around 20 per cent report having shared needles/syringes (NCHSR 1999). Whereas TAFE students are of all ages, most are relatively young.

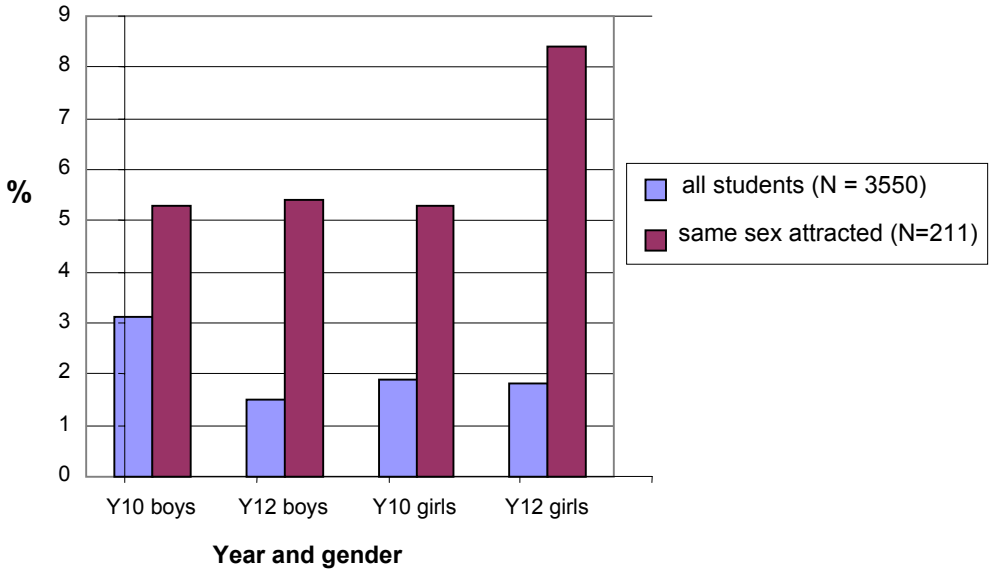

Figure 3. Year 10 and Year 12 students who have ever injected drugs by gender and sexual orientation

Adapted from Lindsay et al. (1997) and Smith et al. (1999).

As already indicated, a substantial proportion of information concerning injecting drug use is derived from surveillance undertaken within NSPs. Since 1995 there has been a year-on-year increase in the number of persons under 20 years participating in this monitoring. During 1995 there were only 65 participants under 20 years but by 1998 this figure had risen to 255 (NCHECR 1999). These figures might appear to suggest that more under 20 year olds are injecting drugs but the conclusions which can be drawn are limited. The increase is likely to be explained in part by the growth in the number of NSPs contributing to HCV monitoring. Furthermore, this may indicate an increase in the uptake of NSP services by those under 20 years—suggestive of successful recruitment strategies on the part of NSPs rather that an increase in the actual number of people in this age group who are injecting drugs.

Whereas the available evidence is sketchy, it is clear that a significant minority of young people are injecting drugs; that for some this injecting begins as early as the junior secondary school years; and that the pool of HCV amongst young people who inject drugs is growing.

The Hepatitis C Policy Background

Understanding policy

Policy cannot be understood simply as the static product of Government (or other policy-making bodies) which is passed down through chains of policy makers and practitioners and is duly implemented, reflecting perfectly the intent of those who produced it. Conceptualising policy in terms of linear stages of formation and implementation overlooks the ways in which policy can be taken to have various meanings, some of which may be inconsistent or contradictory. It also fails to recognise that these various meanings might be interpreted in different ways across settings and contexts (see Bowe et al. 1992). In order to access the complexities of policy, alternative analytic frameworks have been developed which examine the 'policy cycle' (Bowe et al. 1992); undertake 'trajectory' analysis (Whitty et al. 1993) and explore the 'refraction' of policy in local settings (Lingard et al. 1997). Such approaches do not suggest that policy can be made to mean whatever we want it to mean. Rather, while particular underpinnings and intentions of policy may endure and have authority, possibilities for alternative interpretations remain.

Understanding the policy context in which responses to hepatitis C are located, then, is not simply a case of understanding a set of rules evoked by policy and adhering to these. Rather, it is a case of deciphering the underpinnings of policy and identifying the range of possible ways that policy might be interpreted in different contexts.

Governmental responses to hepatitis C are included in policy specific to hepatitis C as well as policy concerned with HIV/AIDS, communicable diseases and illicit drug use. Furthermore, policy in these areas is developed at the levels of National and State/Territory Government. An understanding of the policy context which frames hepatitis C education for young people, then, necessarily entails interrogating policy which has been developed through a variety of processes and which comes out of multiple Government departments and agencies.

These departments may well face differing or even competing demands and be underpinned by divergent frameworks and/or political affiliations. The framing of hepatitis C education for young people by multiple policy statements generated through a range of processes and from a range of National and State/Territory Government departments has the potential to increase further the range of ways in which this policy framework might be understood.

Commonwealth and State Policy and Strategic Frameworks

Australia's initial policy response to hepatitis C was detailed in the National Hepatitis C Action Plan (AHMAC 1994) (hereafter known as the 1994 HCV Plan). This document stated that the management of HCV was to be undertaken within existing Commonwealth and State/Territory programs and clinical services in communicable diseases (including HIV/AIDS), and drug and alcohol programs. The Nationally Coordinated Hepatitis C Education and Prevention Approach (AHMAC Hepatitis C Education and Prevention Reference Group 1995) (hereafter known as the 1995 HCV Approach) was subsequently developed. The 1995 HCV Approach leant strong support to the extension of existing HIV/AIDS education and prevention structures and strategies, in particular those targeted at injecting drug users. These strategies, then, located responses to HCV within a communicable disease model, while also recognising the particular risk faced by injecting drug users and the concomitant need for needle and syringe programs (NSPs) to play a central role in HCV management. Strategic responses to HCV at the level of Commonwealth Government, then, were mediated from the outset by strategy pertaining not only to HCV but also to HIV/AIDS, sexual health and drugs.

Strategic Aims

The 1994 HCV Plan identified the need for a coordinated national education and prevention approach and established structures to develop this. This approach aimed to reduce disease transmission by encouraging appropriate behaviour change, through providing knowledge, skills and opportunities to facilitate such behaviour change. Furthermore, it aimed to raise awareness of the nature of the disease including infectivity, transmission and risk behaviour, and to allay anxieties and eliminate the prejudice and stigma directed against those infected with hepatitis C.

Key strategic objectives identified within the 1995 HCV Approach were to improve knowledge of transmission and reduce risk behaviours and modify their antecedents, and to raise awareness in the general community of the nature and prevalence of the disease including transmission, infectivity and risk behaviour.

Partnerships in Practice: National HIV/AIDS Strategy 1996-7 to 1998-9 (Commonwealth Department of Health and Family Services 1996) (hereafter known as the 1996-99 HIV

Strategy) stated that prevention remains the highest national priority for dealing in an integrated way with the spread of HIV, hepatitis C, STIs and other communicable diseases.

The Commonwealth's National Drug Strategic Framework 1998-99 to 2002-03 – Building Partnerships: A strategy to reduce the harm caused by drugs in our community. (Ministerial Council on Drug Strategy 1998) (hereafter know as the 1998 Drug Strategy) identified its mission as: to improve health, social and economic outcomes by preventing the uptake of harmful drug use and reducing the harmful effects of licit and illicit drugs in Australian society. Key objectives towards this mission were: to increase community understanding of drug-related harm; to prevent the uptake of harmful drug use; to reduce drug-related harm for individuals, families and communities; and to reduce the level of risk behaviour associated with drug use.

In specific reference to education at the community level, the 1998 Drug Strategy sought to enhance families' and communities' ability to respond to drug-related harm by providing accurate and accessible information about drug use and drug-related harm.

More recently, the National Hepatitis C Strategy 1999-2000 to 2003-2004 (DHAC 2000) (hereafter known as the 2000 HCV Strategy) aims to reduce the transmission of hepatitis C in Australia and minimise the personal and social impacts of hepatitis C infection. Amongst the essential components for achieving these aims are harm reduction and education.

HCV, then, is included in a range of Commonwealth policies. These policies focus on differing public health issues and the emphasis upon HCV varies across strategies. At the level of the NSW State Government, responses to HCV are mediated by the above mentioned Commonwealth policies as well as State specific strategies. The context in which HCV education takes place, then, is framed by multiple policies and strategies. For HCV education and prevention to be effective, and for professionals to be confident that their practices are consistent with policy aims, the multiple policy contexts in which HCV education and prevention is situated need to be coherent and integrated. All of the Commonwealth policies discussed here are concerned with the prevention and reduction of the transmission of HCV through the provision of education and resources designed to reduce risk behaviours. However, there seems to be some slippage between the aim of reducing injecting drug using practices which enable HCV transmission and the somewhat more ambitious aim of reducing injecting drug use itself. This apparent slippage underlines the importance of understanding harm minimisation approaches.

Policy underpinnings—Harm Minimisation Approaches

As already discussed, prevalence and incidence of HCV are concentrated amongst people who inject drugs. Given the epidemiology of HCV, relevant policies tend to align HCV education

and prevention with issues of injecting drug use. Indeed, discussion of HCV education and prevention become simultaneous discussions of injecting drug use.

With injecting drug use identified as the key route of HCV transmission, education and prevention strategy is underpinned by a harm reduction approach. Such an approach to injecting drug use has long faced a dilemma. The various illegal behaviours associated with injecting drug use must be simultaneously acknowledged and left unpunished in order for health promotion and service delivery with these populations to be undertaken. It seems that in order to justify a harm reduction approach with injecting drug users governments, who are themselves responsible for preserving the illegality of these associated practices and policing these behaviours, deploy a rational pragmatist approach.

For example, the 1996-99 HIV Strategy states that Governments do not support or encourage illegal risk behaviour such as injecting drug use, but they do acknowledge the reality that these behaviours occur. They recognise their responsibility to develop and implement public health measures designed to minimise the harm that such behaviours can cause, both to individuals and to the community.

The 1998 Drug Strategy offers an almost identical position: Governments do not condone illegal risk behaviours such as injecting drug use, but they do acknowledge that these behaviours occur. They have a responsibility to develop and implement public health and law-enforcement measures designed to reduce the harm that such behaviours can cause, both to individuals and to the community. In these circumstances harm-reduction strategies specifically target the individual using drugs and promote initiatives that benefit the wider community.

The 2000 HCV Strategy promotes a variety of interventions appropriate to particular contexts where risk behaviours occur. The primary focus for these interventions is to reduce transmission of hepatitis C. Interventions under this strategy will complement harm and demand reduction initiatives developed under the aegis of the National Drug Strategic Framework.

Within these contexts the various illegalities involved in injecting drug use are acknowledged at the same time as the need to recognise and work with 'the reality'. As such, the rational pragmatist approach in relation to HCV (and HIV) prevention appears to enable and legitimate an approach to injecting drug use which side-steps the illegal aspects of this and moves beyond legal and moral preoccupations with control and abstinence.

Yet the 1998 Drug Strategy suggests that harm minimisation is composed of three factors: supply reduction, demand reduction and harm reduction. Conceived of in this way, harm minimisation incorporates harm reduction strategies which work with the 'reality' of injecting drug use as well as supply and demand reduction which continue to be underpinned by legal and moral concerns with control and abstinence.

Insight into the relationship between these three strands of harm minimisation is offered by the 1996-99 HIV Strategy. This Strategy calls for a variety of harm-reduction strategies appropriate to particular environments and target groups. Interventions clearly need to be matched to target groups in order to ensure relevancy and accessibility. Yet the suggestion that, in order to be appropriate, harm-reduction approaches will vary across environments and target groups has the potential to effectively limit the reach of strategies which acknowledge and work with the reality of injecting drug use. For instance, accepting and working with the reality of injecting drug use might be deemed 'appropriate' for interventions with existing injecting drug user populations. However, this framework might be taken to position such an approach as 'inappropriate' when working with groups which are not known or believed to engage in (or be likely to engage in) these practices. In this way, asserting the need to match appropriate harm-reduction strategies to targeted groups validates harm minimisation within a rational pragmatist approach while simultaneously retaining the overall aim of preventing injecting drug use and broadening the reach of demand reduction strategies, that is, those concerned with abstinence.

That harm reduction and demand reduction strategies are targeted at particular groups, which appear to be conceived of as discreet, is made explicit in the 1998 Drug Strategy. It is asserted that State/Territory Governments have a responsibility for implementing public information and education programs aimed at discouraging the uptake and reducing the level of harmful drug use and reducing drug related harm. This notion of the 'public' seems to exclude existing injecting drug users, and education interventions aimed at this 'public' are directed to foreground the reduction of demand /drug use.

Such a harm minimisation approach to HCV education and prevention, which positions existing injecting drug users as the appropriate target group for harm reduction interventions (and potentially excludes other audiences from such an approach) is reflected at the State level. The NSW Legislative Council Standing Committee on Social Issues 1998 report, Hepatitis C: The Neglected Epidemic – Inquiry into hepatitis C in New South Wales (hereafter known as the 1998 NSW HCV Inquiry) asserts its full support for the concept of harm minimisation and considers it to be the most effective underlying principle for strategies to prevent the transmission of hepatitis C amongst injecting drug users. It is the basis upon which the Committee framed recommendations directed at injecting drug users.

It is unclear whether the notion of harm minimisation is here understood to incorporate those three factors identified within the 1998 Drug Strategy. However, it seems that harm minimisation (here apparently synonymous with harm reduction) is understood to be appropriate for those already injecting drugs. As such, the inference seems to be that other strategies, ie supply and demand reduction (aimed at control and abstinence), might be deemed to be the appropriate approach with populations not known or believed to be already (or likely to) engaged in injecting drug use.

The New South Wales Hepatitis C Strategy (NSW Health Department 2000) (hereafter known as the 2000 NSW HCV Strategy) takes the position that, in the case of injecting drug

use, harm minimisation strategies include the spectrum of messages: cessation, reducing consumption, drug substitution, provision of sterile injecting equipment, education about safe administration practices, and so on. This approach acknowledges that individuals continue to participate in illegal behaviours.

Here, harm minimisation clearly incorporates a spectrum of harm reduction and demand reduction approaches. Yet these appear to focus exclusively on people/groups already injecting drugs. It is unclear whether such a spectrum of approach is also considered to be appropriate with people/groups not known/believed to engage in injecting drug use.

This apparent drift away from the rational pragmatism of harm reduction towards the legal and moral concerns of supply and demand reduction (control and abstinence) is completed within NSW Government policies specifically concerned with young people. The 1998 NSW HCV Inquiry mandates that NSW Health and the Department of Education and Training ensure that the basic message of all strategies to prevent or delay initial injecting behaviour in adolescents is a very clear one that encourages young people not to take drugs.

By positing a harm minimisation strategy which incorporates supply, demand and harm reduction as well as asserting the target group appropriateness of interventions, policies developed at the level of the Commonwealth Government make possible particular policy trajectories. In the case of some interpretations of harm minimisation, there is a sense in which harm reduction strategies become marginal activities aimed at (and contributing to the further marginalisation of) a marginalised target group, existing injecting drug users. Conversely, supply and demand reduction—strategies which seem to sit least comfortably within a harm minimisation approach—become the staple of strategies aimed at mainstream audiences. And HCV education for young people is largely restricted to a concern with abstinence.

HCV Education for Young People

The Commonwealth strategies discussed above identify various target audiences for education and prevention, and the importance of HCV, HIV and drug education for young people is stressed in all but one of these documents[5]. At the level of the NSW State Government, which is largely responsible for the development and provision of such education, young people continue to be identified as a priority group for education in relation to these issues.

Furthermore, strategies developed by the Commonwealth and NSW Government identify schools as a key site for the provision of HCV, HIV and drug education (1996-99 HIV Strategy, 1997 ANCARD, 1998 Drug Strategy, 1999 NSW Response to the Drug Summit). This is based on the belief that the schools are the most comprehensive and efficient means of access to the general community and that schools and other educational institutions are one of the most important non-health sector areas that can be used to improve and increase education on

[5] The 1995 HCV Approach does not identify young people among those audiences to be prioritised for HCV education.

sexual health and related matters (ANCARD Working Party on Indigenous Australians' Sexual Health 1997).

Hence, there is a broad consensus amongst policy makers at both the Commonwealth and the State level that young people should receive HCV education and that the school is a key site for the provision of this.

Approaches to HCV and Drug Education for Young People

As already noted, the principal current route of HCV transmission renders drug education central to HCV prevention. Midford et al. (1999) argue that the goals of school-based drug education programs can be characterised as being concerned with either abstinence or harm minimisation. It is argued that while overall responses to drug issues in Australia have taken a harm minimisation approach, this remains controversial in relation to school based programs. Munro (1997) suggests that an abstinence approach which makes the prevention of drug use the goal of school-based drug education imposes an unfair burden on schools. Rather, he argues that drug education ought to prepare young people for living in a drug using society.

Moreover, Munro (1998) calls for a rethinking of the assumptions behind drug education and a review of the traditional responses of schools to drug use by students. He suggests that school-based drug education should recognise that the prevailing culture in many ways legitimises much drug use and should therefore adopt a pastoral rather than punitive approach. Such an approach would aim to inform young people about, rather than deter them from, drug use. Loxley and Davidson (1998) suggest that notions of rational decision making are unhelpful in understanding risk practices amongst young people who inject drugs. They suggest that drug education for young people should move away form such a model and engage with the complexities of the contexts of young people's lives.

The 1999 NSW Drug Summit (hereafter known as the Summit) made a number of recommendations concerning drug education in schools. Recommendation 10.1 suggested that this should be delivered within a school context characterised by: (a) a shared set of values and ethics, underpinning a school culture which is antithetical to the abuse of drugs in any form, being based on a whole school approach to health provision; (b) the pursuit of abstinence from illegal drugs as the safest and desired option; and (c) the adoption of realistic strategies to reduce and prevent harm created by drug use.

This clearly identifies abstinence as the paramount goal of school-based drug education. Nevertheless, the Summit's call for the adoption of realistic strategies, along with its recommendation that such education should be honest, consistent, proactive, non-punitive and anticipate the need for education in advance of the risk of abuse, indicates that harm reduction approaches also have a legitimate place within school programs.

The Commonwealth Policy Framework for School-Based HCV and Drug Education

Whereas strategy at the National level acknowledges the need for HCV education for all young people, there is also a consistent targeting of specific sub-groups within this population. The 1994 HCV Plan suggests that education should be targeted particularly at those youth who may be contemplating initiating drug use. The 1996-99 HIV Strategy suggests that the particular problems and vulnerabilities of homeless young people must be recognised and responded to accordingly.

As already discussed in the examination of the particular approach to harm minimisation taken within various policy documents, the targeting of specific populations and the matching of interventions to these has been shown to be an important aspect of effective health education interventions. However, positioning certain groups of young people as being at particular risk might inadvertently contribute to the stigmatisation and pathologisation of these groups.

Furthermore, assessing which young people are particularly vulnerable (eg. through their identification as contemplating drug use) and which are not is an all but impossible task that has the potential to remake multiple discriminatory stereotypes at the same time as it omits a broad range of young people. In addition, such an approach might contribute to perceptions that young people who are not identified as being particularly vulnerable have only a low level of need for such education. In turn, this has the potential to restrict harm reduction based education to narrowly defined audiences of 'vulnerable' young people, with education for the majority of young people proceeding from the assumption that these young people have not and will not engage in risk practices such as injecting drug use.

The 1996-99 HIV Strategy discusses school based HIV/AIDS education in some detail[6]. It contends that the greater risks of HIV, STIs and hepatitis C associated with sexual activity and drug use among some students should be addressed within the broader sexual health context.

This seems to assert the need for an integrated and holistic health education approach. Yet it also appears to be open to a number of problematic interpretations. Locating drug issues with a sexual health framework has the potential to make drug issues secondary. Furthermore, setting sexual activity and drug use alongside one another in this way may be taken to infer an overly simplistic causality between drug use and sexual activity and/or unsafe sexual activity amongst young people. It also has the potential to contribute to the confusion concerning routes of HCV transmission (Lindsay et al. 1999). Given that HCV is believed to be transmitted infrequently through sexual activity, the appropriateness of locating HCV alongside HIV and

[6] Throughout the 1996-99 HIV Strategy's discussion of education the focus is almost exclusively upon HIV/AIDS, with school-based HCV education receiving only one specific mention. While the document's introductory statements asserted integration without dilution or subsumption, this seems to disappear somewhat within the detail of the document. Nevertheless, the 1996-99 Strategy stresses that it is *as concerned* with HCV as it is with HIV/AIDS. This opens the possibility of reading all of the strategy's references to HIV/AIDS education *not as an omission of HCV, but as a generic inclusion of it*. In this way, the mandate for HCV education for young people, in schools and elsewhere, is made clear.

STIs in this way appears questionable. This approach locates HCV within a sexually transmissible infections model. There are likely to be potential benefits for HCV education of building on the success to date of HIV education. Yet, as new HCV infections are predominantly amongst injecting drug users, it seems evident that HCV education needs to be addressed squarely in the context of drug education and a blood borne infections model.

The framework for HCV education outlined in the 1996-99 HIV Strategy also appears problematic in terms of the ways in which both *risks* and *audiences* might be defined. The assertion that 'greater risk' is associated with 'sexual activity and drug use' seems to infer that these behaviours are intrinsically risky. This position threatens to devalue the established harm reduction approaches of safe sex and safe injecting practice (which have been shown to have considerable success) and by extension holds the potential to become a platform for education underpinned by a moral discourse of abstinence. The assertion that these greater risks are faced by 'some students' adds a further level of confusion. This might be taken to mean that only some students engage in sexual activity/drug use or that only some students engage in these activities in ways which expose them to risk of HIV, STIs or HCV. Either way, it implicitly suggests that many students are at lesser risk, a lesser risk which may be taken, in turn, to suggest that these students require lesser educational intervention in these areas.

Within the various Commonwealth policies and strategies there appears to be a degree of incoherence concerning the proper location of HCV education. That is, whether HCV is incorporated into drug education on the basis of its key route of transmission or whether it is included in sexual health education, despite the fact that it is only believed to be sexually transmitted under very specific circumstances. While the nature of HIV transmission means that it straddles both of these areas, this is not the case for HCV. As such, the appropriateness of including HCV in discussion of sexually transmitted infections must be questioned. Indeed, such inclusion has the potential to add to the previously documented confusion concerning the different forms of hepatitis (Crawford et al. 1998; Lindsay et al. 1999; Van de Ven et al. 1999).

The Commonwealth has, through the various strategies discussed here, issued a charter to State/Territory governments to ensure that HCV, HIV and drug education for young people is provided both within schools and in other settings. However, it does not define the principles that should underlie provision or the subsequent content and messages. Furthermore, as shown, there is substantial room for Commonwealth policies and strategies to be interpreted in ways which are likely to be problematic; specifically, the misplaced emphasis on a sexual health framework and the possible interpretation that the 'appropriate' approach with the majority of young people — that is, those not identified as being 'at risk'—be underpinned by abstinence.

The NSW Policy Framework for School-Based HCV and Drug Education

The NSW Response to the Drug Summit of 1999 (hereafter known as the Response) makes a commitment to the development of a strategic approach for meeting the needs of vulnerable young people and programs to meet the specialist needs of particular communities or groups of students. The key aims of the Response are to prevent infection with HCV by discouraging young people from engaging in risk behaviours; and to provide information on harm minimisation for young people who may have already become involved in drug use. Similarly, the publication Young People's Health: Our Future — Illicit Drugs (http://www.health.nsw.gov.au/health-public-affairs/youthhealth/drugs.html) asserts the importance of the early identification of at-risk young people.

At the State level, as at the Commonwealth level, harm reduction strategies are targeted at particular groups of young people deemed to be 'at risk' or believed to be already engaged in drug use, while demand reduction dominates education for other young people.

The dominance of demand reduction (or abstinence) approaches to drug education for young people in NSW schools is seen clearly within the Response which requires that NSW Health and the Department of Education and Training ensure that the basic message of all strategies to prevent or delay initial injecting behaviour in adolescents is a very clear one that encourages young people not to take drugs.

Similarly, Young People's Health: Our Future — Illicit Drugs (see Internet address above) identifies a key goal as being to prevent and reduce illicit drug use by young people. Furthermore, the Crossroads curriculum (NSW Dept of Education & Training 2000) which was introduced through the Response in an effort to enhance school-based drug education effectively omits injecting drug use and HCV from the curriculum.

This is in stark contrast to those statements concerning harm minimisation made in various Commonwealth documents which are characterised as taking a rational pragmatist approach. It seems that the opportunities identified within Commonwealth approaches to harm minimisation policy to shift towards a moral concern with abstinence have been deployed in just this way within some NSW policies and programs.

In this way, HCV education for the majority of young people is to be framed by an abstinence approach, and only those young people already using drugs will be given harm reduction based education. New injecting drug users are particularly at risk of HCV and Commonwealth strategies identify new and potential injecting drug users as key groups for HCV education. The restriction of harm reduction approaches to people (including, but especially, *young* people) already engaged in injecting drug use appears as a fundamental contradiction. The persistence of an abstinence approach to school-based HCV and drug education contributes to ensuring that young people who might inject drugs at some point in the future will not be equipped with the knowledge and skills necessary to reduce the risk of HCV (or HIV) transmission.

Furthermore, research into abstinence-based drug education programs has provided evidence that appeals to young people not to take drugs persistently fail. Current NSW strategies manoeuvre away from a broadly-based harm reduction approach which has been demonstrated to be successful to an abstinence-based approach which has repeatedly been demonstrated to be unsuccessful. And this has been facilitated by a similar shift with Commonwealth strategy. Midford and colleagues (1999) have argued that concerns with public profile and policy expediency of school-based drug education programs often outweigh concerns with the proven effectiveness of different approaches. It is only possible to understand the persistence of abstinence approaches to school-based drug education in these terms.

The Hepatitis and Health Survey

Participants

The participants of the Hepatitis and Health Survey were male and female NSW Government High School students from Years 9 and 11. Anonymity was assured through not asking for their names, the sealing of completed questionnaires in envelopes and the amalgamation of data with other students across New South Wales to further de-identify individual students. All participants were given the option to not answer any questions they did not feel comfortable answering. However, most of the students answered nearly all of the questions.

Sampling

The sample design was a stratified two-stage probability sample, with schools selected randomly at the first stage of sampling and Year 9 and Year 11 classes randomly selected within schools at the second stage of sampling. The strata were the health regions of New South Wales. Appendix B sets out the basic principles of sampling underlying this design. Appendix C sets out the target population enrolments.

The sampling procedure began with the clustering of 225 NSW Government High Schools into cells of three schools from neighbouring geographic areas. In turn, one school from each cell was encouraged to participate in the Hepatitis and Health Study. With an assumed achievable sample of 20 students per school at each of the two year levels, that is, approximately 1500 students at each of the two year levels, we expected to recruit a sample size of 3000. In order to obtain better estimates for comparing the metropolitan and non-metropolitan areas, the same number of schools and students were selected from each of the two areas. Appendix D shows the allocation of sample schools based on the percentage of students in the regional strata. For logistical convenience the sampling procedure omitted small schools, defined as those with fewer than 20 students in Years 9 or 11.

A first and second replacement school were allocated for each of the initial schools selected for the sample. The replacement schools were defined to be geographically close, based on post codes, to the one originally selected, on the assumption that the students of the replacement school would have similar characteristics to those of the original school. Use of replacement schools disturbs the underlying probability basis of the selection. For this reason, replacement schools were only included after considerable effort had been exerted to obtain the participation of the original schools.

In each school, one roll class, or suitable substitute class, in Year 9 and Year 11 were randomly selected for inclusion in the survey. It was necessary to use an intact class rather than a random cluster of fixed size drawn from the target population for each school. This use of an intact class as a surrogate for a random cluster is a departure from strict random probability sampling. The use of an intact class has the potential effect of increasing the intraclass correlation and hence of the standard errors of sampling. Nevertheless, this practice was justified in terms of a greater willingness of schools to participate, and predicted higher response rates. Intense effort was given to obtaining a higher response at the first stage of sampling where a lower response rate has a greater effect on the magnitude of the standard errors. Appendix E shows calculations of sampling errors.

Questionnaire

A key component of the Hepatitis and Health Project was determining the extent of high school students' knowledge and understandings of hepatitis B and C, particularly as they relate to self-perceptions of risk. Students voluntarily (following parental/guardian consent) and anonymously self-completed a short questionnaire. The questionnaire included demographic items as well as items concerned with students' knowledge and experience of hepatitis and some associated risk practices. The nature of hepatitis, modes of transmission and the threat to public health posed by the current hepatitis epidemic meant that the survey included some sensitive questions which would not, as a matter of course, be asked of high school students. The survey was designed in accordance with the style of those used successfully in previous questionnaires. Through previous use in surveys with students, sensitive questions of this nature have been shown to be acceptable to student respondents, to parents/guardians, and to the broader community. A copy of the questionnaire is included as Appendix A to this report.

Procedure

The survey was undertaken during the second and third school terms of 2000. It followed closely the first major hepatitis C public awareness campaign in New South Wales. The awareness campaign involved, among other things, various television advertisements that were screened many times over a period of weeks.

After the principal of the first school in each cell was contacted, a pack of materials were forwarded. This pack contained an introductory letter, approval letters from the NSW Department of Education and Training and the University of New South Wales Ethics Secretariat, and a sample of the guardian consent form and the questionnaire booklet.

Upon each school's approval and our receipt of the number of classes and students per Year 9 and 11 class, a sampling framework was employed to select classes at random to be surveyed. A survey pack was sent to each class with parental consent forms and detailed instructions for the teachers.

After returning a signed consent form, each participating student was given a survey booklet and a plain envelope to be used after the questionnaire was completed. Both survey booklet and envelope were to remain free of the participant's personal details to encourage more honest responses through anonymity. Completed questionnaires were returned the University of New South Wales for data entry and analysis together with parent and guardian consent forms.

Results

Participation

In all, 46 out of the potential 75 schools participated. Of the year 9 students potentially available to us, 49.3% completed a questionnaire. Of the year 11 population available to be surveyed, 57.2% completed a questionnaire.

Many schools initially contacted declined to participate in the Hepatitis and Health Survey as the survey coincided with industrial action in the NSW public school system or clashed with one or two other surveys to which the schools had already committed.

The data from the 1330 students were weighted according to their relative size to the total school population according to the NSW Department of Education and Training's sub-geographic clustering of Government High Schools.

Participants

The sample was quite balanced in terms of Year 9 and Year 11 students, with 632 students from Year 9 and 698 students from Year 11.

Table 1 : School year

Year 9	632 (47.5%)
Year 11	698 (52.5%)
Total	**1330 (100%)**

The sample was also balanced in terms of male and female students. In total, 666 male students and 660 female students participated in the Hepatitis and Health Survey.

Table 2 : Gender

Male	666 (50.2%)
Female	660 (49.8%)
Total	**1326 (100%)**

Note: Data were missing on this item for 4 students.

The students who completed a questionnaire ranged in age from 13 to 20 years with most between 14 and 17 years (median = 16 years).

Table 3 : Age

13	17 (1.3%)
14	479 (36.2%)
15	171 (13.0%)
16	502 (38.1%)
17	136 (10.3%)
18	9 (0.7%)
19	2 (0.1%)
20	3 (0.3%)
Total	**1319 (100%)**

Note: Data were missing on this item for 11 students.

Most of the students were born in Australia. Among the remainder, the majority of students were born in the Asia-Pacific region.

Table 4 : Country of birth

Australia	1139 (85.9%)
South East Asia	51 (3.9%)
North East Asia	51 (3.8%)
India/ Pakistan/ Sri Lanka	21 (1.6%)
Pacific Islands	13 (1.0%)
UK/ Ireland	10 (0.8%)
New Zealand	9 (0.6%)
Other	32 (2.4%)
Total	**1326 (100%)**

Note: Data were missing on this item for 4 students.

For most of the students, English was the language mainly spoken at home. Of those who spoke a language other than English at home, the most spoken languages were one of the Chinese dialects, Vietnamese or Khmer or Laotian, Hindi or Urdu or Tamil, Japanese or Korean, Greek or Macedonian, or Arabic or Lebanese.

Table 5 : Main language spoken at home

English	1057 (81.6%)
Another language	238 (18.4%)
Total	**1295 (100%)**

Note: Data were missing on this item for 35 students.

The study recruited 76 students from an Aboriginal and/or Torres Strait Islander background, representing 5.7% of the overall sample.

Table 6 : Aboriginal or Torres Strait Islander origin

Yes	76 (6.3%)
No	1125 (93.7%)
Total	**1201 (100%)**

Note: Data were missing on this item for 129 students.

SEXUALITY

Approximately one third of the students reported having engaged in sexual activity. Much smaller proportions of students reported having had sex with someone of the same gender. These same-sex data should be treated with caution as they may be different had the survey been administered in a non-classroom environment with a greater degree of privacy and anonymity.

Table 7 : Sexual experiences and desires

	Males	Females
Experiences		
I have had sexual experience with a male/s	14 (2.1%)	212 (32.1%)
I have had sexual experience with a female/s	240 (37.2%)	10 (1.5%)
Desires		
I would like to have sexual experience with a male/s	16 (2.4%)	232 (35.2%)
I would like to have sexual experience with a female/s	374 (56.2%)	22 (3.3%)

Note: Items are not mutually exclusive

Self-reported hepatitis diagnosis

Only a small number of students self-reported having hepatitis.

Table 8 : Self-reported hepatitis diagnosis

Hepatitis strain	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
HAV	13	1.0	8	1.2	5	0.8	6	0.9	6	0.9
HBV	13	1.0	6	0.9	7	1.1	4	0.6	9	1.3
HCV	11	0.8	4	0.6	7	1.1	7	1.1	4	0.6
Other form of hepatitis	1	0.1	1	0.2	—		1	0.2	—	

Self-reported vaccination against hepatitis

Small proportions of students self-reported having been vaccinated against hepatitis A and B. There appears to be a degree of misunderstanding concerning the vaccination against various forms of hepatitis as almost 10 percent of students believe they are immunised against HCV. These vaccination data should therefore be treated with some caution.

Table 9 : Vaccinated against hepatitis

Hepatitis strain	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
HAV	177	13.3	113	17.0	64	9.7	71	11.2	106	15.2
HBV	241	18.1	128	19.2	111	16.9	94	14.9	146	21.0
HCV	127	9.5	77	11.5	50	7.6	62	9.8	65	9.3

Piercings and tattoos

A large proportion of the students have piercings, notably ear piercings in the case of female students. Other body piercings are less common, but more prevalent among female students. Few students have tattoos.

Table 10 : Any piercings or tattoos

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
Ear piercings	649	48.8	91	13.7	555	84.1	280	44.3	369	52.8
Body piercings	135	10.1	28	4.2	104	15.8	52	8.3	82	11.8
Tattoos	62	4.7	37	5.6	23	3.5	28	4.4	35	5.0

Self-reported likelihood of contracting hepatitis

Over ten percent of students believed they were likely to contract HBV or HCV. There were no real gender differences. Year 11 students are more pessimistic than Year 9 students regarding their likelihood in contracting either HBV or HCV.

Table 11 : Perceived likelihood of contracting hepatitis

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
HBV										
Likely to contract	155	11.8	82	12.4	74	11.3	60	9.6	95	13.8
Unlikely to contract	1154	88.2	572	87.6	579	88.7	561	90.4	593	86.2
HCV										
Likely to contract	165	12.9	80	12.7	85	13.0	68	11.0	97	14.4
Unlikely to contract	1121	87.1	552	87.3	566	87.0	547	89.0	574	85.6

Students were asked to nominate reasons why they thought they were likely or unlikely to contract HBV and HCV (see Questions 23-24, 26-27, Appendix A). The students were not asked to rank their reasons so inferences about order of importance cannot be made.

The students selected a wide variety of reasons to support their perceptions that they would not contract HBV. Half of these students attributed it to not ever having had sexual intercourse, females more so than males and Year 9 students more so than their Year 11 counterparts.

Table 12 : Reasons associated with the perceptions of 'unlikely to contract HBV'

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
I don't inject drugs	936	81.1	450	78.7	483	83.5	454	80.9	482	81.3
I don't share needles	864	74.8	418	73.2	443	76.5	415	73.9	449	75.7
I don't share other injecting equipment	843	73.1	405	70.8	436	75.3	409	72.8	434	73.2
I have never had sex	647	56.1	289	50.5	358	61.9	386	68.8	261	44.0
I have been vaccinated against HBV	219	19.0	120	21.0	98	16.9	97	17.3	122	20.6
I keep away from HBV positive people	174	15.1	111	19.5	61	10.5	94	16.7	80	13.5
My religion doesn't get HBV	77	6.7	50	8.7	27	4.7	45	8.0	32	5.5
HBV is not a problem in Australia	73	6.3	51	8.9	22	3.8	42	7.4	31	5.3
I am too young to get HBV	71	6.2	42	7.4	29	5.0	49	8.8	22	3.7
HBV is not infectious	69	6.0	49	8.6	20	3.4	37	6.7	31	5.3
My culture doesn't get HBV	62	5.4	39	6.8	23	3.9	37	6.6	25	4.2
None of these reasons	128	11.1	76	13.3	51	8.8	58	10.3	70	11.8

Note: Items are not mutually exclusive

A sizeable proportion of the students who believed they would contract HBV understood HBV to be a problem in Australia. Approximately a quarter of the students who believed they

will contract HBV associated that with not being vaccinated against HBV and therefore being susceptible.

Table 13 : Reasons associated with perceptions of 'likely to contract HBV'

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
HBV is a problem in Australia	74	47.4	33	40.2	41	55.3	29	48.5	45	46.7
I have sex	60	38.6	29	36.2	30	41.3	17	28.6	43	44.8
HBV is infectious	56	36.0	25	30.9	31	41.6	20	33.3	36	37.7
I have not been vaccinated against HBV	39	24.8	22	26.6	17	22.8	13	21.8	25	26.7
I am at an age where people get HBV	28	17.9	15	18.6	13	17.0	8	12.6	20	21.2
I know people with HBV	14	8.7	8	10.0	5	7.3	7	11.0	7	7.3
I inject drugs	12	7.6	8	10.3	3	4.7	7	11.2	5	5.4
I share needles	8	5.4	7	8.0	2	2.5	5	8.8	3	3.3
My culture gets HBV	8	5.3	4	5.3	4	5.4	3	5.1	5	5.5
I share other injecting equipment	6	3.7	4	4.8	2	2.5	4	6.1	2	2.2
My religion gets HBV	5	3.1	2	2.4	3	3.8	2	3.2	3	3.1
None of these reasons	23	14.7	15	18.8	8	10.3	10	17.3	13	13.1

Note: Items are not mutually exclusive

Most of the students selected items associated with the common modes of HCV transmission as the reasons why they perceived themselves not likely to contract HCV. Interestingly, never having had sex was a quite frequently cited justification, particularly noticeable among female and Year 9 students. The responses indicate a degree of confusion concerning having been vaccinated against HCV.

Table 14 : Reasons associated with perception of 'unlikely to contract HCV'

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
I don't inject drugs	883	78.8	418	75.8	463	81.7	432	78.9	451	78.6
I don't share needles	795	70.9	374	67.8	419	73.9	386	70.5	409	71.3
I don't share other injecting equipment	787	70.2	373	67.7	412	72.7	380	69.3	408	71.1
I have never had sex	621	55.4	279	50.6	343	60.5	364	66.5	258	44.9
I keep away from HCV people	184	16.4	104	18.8	79	13.9	97	17.7	87	15.1
I have been vaccinated against HCV	121	10.8	74	13.5	47	8.3	58	10.6	63	11.0
My religion doesn't get HCV	66	5.9	42	7.6	24	4.3	38	7.0	28	4.9
HCV is not a problem in Australia	61	5.4	43	7.8	18	3.1	32	5.8	29	5.1
My culture doesn't get HCV	61	5.4	39	7.1	22	3.9	39	7.0	23	3.9
I am too young to get HCV	57	5.1	34	6.1	23	4.1	37	6.7	20	3.6
HCV is not infectious	40	3.5	18	3.3	22	3.8	23	4.1	17	3.0
None of these reasons	164	14.6	85	15.4	78	13.8	70	12.8	94	16.3

Note: Items are not mutually exclusive

Approximately half of the students considered that HCV is a problem in Australia and cited this as the reason for being likely to contract HCV. A large number of students incorrectly chose having had sex as the factor likely to increase their chance of contracting HCV. These responses indicate a degree of confusion surrounding the various strains of hepatitis. Also, more than a quarter of these students cited not being vaccinated against HCV as a reason they were likely to contract HCV.

Table 15 : Reasons associated with perception of 'likely to contract HCV'

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
HCV is a problem in Australia	76	46.2	37	46.2	39	46.4	38	55.7	38	39.6
I have sex	65	39.6	37	46.2	28	33.2	22	32.3	43	44.8
HCV is infectious	61	37.0	27	33.2	34	40.8	27	39.4	34	35.4
I have not been vaccinated against HCV	46	28.0	24	30.2	22	26.1	19	27.4	28	28.5
I know HCV positive people	26	15.9	16	19.4	11	12.6	11	16.9	15	15.2
I am at an age were people get HCV	25	15.3	14	17.7	11	13.1	12	17.5	13	13.8
I inject drugs	12	7.1	7	9.0	4	5.0	6	9.5	5	5.4
My culture gets HCV	12	7.0	7	8.9	5	5.4	7	10.7	4	4.5
I share other injecting equipment	10	6.1	5	6.3	5	5.7	8	11.1	3	2.7
I share needles	10	5.8	7	8.3	3	3.0	5	7.8	4	4.3
My religion gets HCV	7	4.0	3	3.7	4	4.2	4	6.5	2	2.2
None of these reasons	21	12.5	9	11.3	12	13.7	9	13.7	11	11.7

Note: Items are not mutually exclusive

KNOWLEDGE OF HEPATITIS

Responses to the knowledge of hepatitis questions indicate generally quite poor understandings about hepatitis. Whereas the majority of students correctly identify injecting drugs as a risk, sexual contact is falsely perceived by most students to be the most common way of transmitting hepatitis C.

There appears to be confusion about the availability of vaccines for the various forms of hepatitis. Fewer than half of all students were able to correctly answer questions about HAV and HBV vaccination. Only 16% of students correctly answered that no vaccine for HCV currently exists.

Marked differences between the genders occurred for two items. Females were more likely to know that it is possible to be vaccinated against hepatitis B. And males were more likely to identify the sharing of razors and toothbrushes as a possible way to transmit hepatitis C.

Table 16 : Hepatitis knowledge

Item	Correct Response	All		Male		Female		Year 9		Year 11	
		N	%	N	%	N	%	N	%	N	%
People who have injected drugs are not at risk for HCV	No	839	63.6	403	61.4	433	65.8	391	62.5	448	64.7
HCV can be transmitted by unsterile tattooing or body piercing	Yes	747	56.5	370	55.9	376	57.2	351	56.1	396	56.9
It is possible to be vaccinated against HBV	Yes	606	45.9	262	39.7	343	52.1	257	41.2	349	50.2
It is possible to be vaccinated against HAV	Yes	536	40.6	257	39.1	278	42.3	241	38.6	295	42.4
Sharing razors or toothbrushes can transmit HCV	Yes	501	37.9	285	43.2	214	32.4	236	37.7	265	38.2
For most people, HCV infection has no long term effects on health	No	471	35.8	246	37.3	224	34.3	204	32.6	267	38.6
It is possible to be vaccinated against HCV	No	214	16.2	125	18.9	88	13.4	114	18.2	101	14.5
There is a successful treatment for HCV	Yes[1]	169	12.8	95	14.3	74	11.3	78	12.4	91	13.2
Sexual contact is the most common way of transmitting HCV	No	164	12.4	95	14.4	69	10.5	61	9.7	103	14.9

Note: Figures are *n* and % for *correct* response.

[1] For *some* people

PREFERRED HEPATITIS INFORMATION SOURCES

People who are already positioned close to the students are the preferred sources of information about hepatitis, especially health professionals, teachers and parents. The data reveal a gender difference to receiving health information about hepatitis. Female students are more receptive to a greater range of information sources, including from their friends. It is interesting to note that youth workers and school counsellors are not preferred sources of hepatitis information, by either gender or either of the school years.

Table 17 : Preferred sources of information about hepatitis

	All		Male		Female		Year 9		Year 11	
	n	%	n	%	n	%	n	%	n	%
My Doctor	953	71.6	484	72.7	466	70.6	438	69.3	514	73.8
Teacher	636	47.8	273	40.9	361	54.6	293	46.3	343	49.2
Parent	626	47.1	294	44.1	332	50.2	296	46.8	330	47.3
Health professional	590	44.4	291	43.7	298	45.1	265	41.9	325	46.6
Television	557	41.9	251	37.7	304	46.1	243	38.4	314	45.0
Brochure	550	41.3	233	35.0	315	47.8	236	37.3	314	45.0
Newspaper/ Magazine	544	40.9	201	30.2	341	51.7	225	35.6	319	45.8
Internet	435	32.7	223	33.5	211	31.9	194	30.6	241	34.6
Friend	412	31.0	178	26.8	231	35.0	178	28.1	234	33.6
Hotline	385	28.9	202	30.2	181	27.5	189	29.9	196	28.0
Other doctor	329	24.8	192	28.9	136	20.5	149	23.6	180	25.8
Youth worker	299	22.5	133	19.9	165	25.0	115	18.2	183	26.3
School Counsellor	273	20.5	134	20.1	138	20.9	114	18.0	159	22.7
None of these	106	7.9	77	11.5	29	4.4	67	10.6	38	5.5

Conclusions

The aims of the Hepatitis and Health Project were threefold:

- To review the relevant literature on hepatitis and health, particularly as it relates to hepatitis C and the current policy environment (ie the policy environment which pertained during the first half of 2000).
- To determine high school students' knowledge and understandings of hepatitis B and C, principally as they relate to self-perceptions of risk.
- To contribute to the development of a framework and appropriate teaching/learning materials for the inclusion of hepatitis education within high school programs.

Largely, these aims were achieved.

The analysis of the policy background to education about the hepatitis C virus (HCV) reveals that HCV education for the majority of young people is to be framed by an abstinence approach, and only those young people already using drugs will be given harm reduction based education. New injecting drug users are particularly at risk of HCV and Commonwealth strategies identify new and potential injecting drug users as key groups for HCV education.

The restriction of harm reduction approaches to people (including, but especially, *young* people) already engaged in injecting drug use appears as a fundamental contradiction. The persistence of an abstinence approach to school-based HCV and drug education contributes to ensuring that young people who might inject drugs at some point in the future will not be equipped with the knowledge and skills necessary to reduce the risk of HCV (or for that matter HIV) transmission/acquisition.

Key findings of the survey, based on responses from 1330 students, are summarised as:

- Only a small number of students self-report having either hepatitis A, B or C
- Small proportions of students report having been vaccinated against HAV (13%) and HBV (18%)
- A small proportion of students (10%) believe erroneously that they have been immunised against HCV
- A large proportion of the students have piercings, notably ear piercings
- Most piercings were performed in pharmacies, beautician/hairdressing premises or piercing studios
- Few students have any tattoos
- Most tattoos were done in a tattoo parlour
- Over 10% of students believe they are likely to contract HBV or HCV
- Many students incorrectly associate HCV with sexual practice
- The students generally have quite poor knowledge about hepatitis
- Health professionals, teachers and parents are preferred sources of information about hepatitis.

The generalisability of these findings is limited by the overall school participation rate and the response rate of students within classes. Unfortunately, and for various reasons not directly related to the conduct of the survey, data from only 46 schools (out of 75 selected) were returned. However, there is no reason to assume that the participation of these specific schools biased the results in any way. The participating schools and the students themselves reflected the range and diversity of characteristics intended for the sample.

In light of students' current understandings of transmission modes of hepatitis as well as current health policies, our policy analysis and data indicate a need to disseminate more hepatitis information and harm minimisation education to high school students. The data provide evidence that some risk behaviours do exist in high school populations alongside confusion about the various forms of hepatitis and their common modes of transmission.

From the items pertaining to the nature of HBV and HCV, there is clear evidence of significant gaps in the knowledge of high school students. Students appear to be confusing hepatitis C with the other forms of hepatitis where 10% students report having been immunised against HCV and 88% of students could not answer correctly that sex is not a common mode of HCV transmission.

The analysis indicates that while the school system (particularly classroom teachers) is one avenue for reaching a large audience to remediate the current inadequacies in hepatitis knowledge, youth workers and school counsellors are less favoured sources of information.

The analysis also points to potential conflicts and 'poor fit' associated with situating HCV and blood awareness education solely within core drug education and sexuality education

programs. Whereas — properly handled — there is a place for such education through the core curriculum, opportunities for providing HCV and harm reduction education separate from drug education and sexuality education should be explored.

Specific questions about drug use and injecting drug use were not asked in the Hepatitis and Health survey. Future research with young people would benefit from data on current levels of drug use, as well as injecting drug use, as it would then be possible to examine the relationships between actual drug use, knowledge, and perceptions of risk.

The current survey data form part of the Hepatitis and Health project. Personnel from the New South Wales Department of Education and Training have worked in tandem to develop appropriate curriculum materials that would facilitate education about hepatitis within high school programs. These materials will be disseminated in early 2001.

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Appendix A

The University of New South Wales
Hepatitis and Health Survey

This survey will be completed by a random sample of high school students in New South Wales. We need to find out what you know about hepatitis and any associated risk practices. The results will be used to improve health education programs.

You can help by filling out the survey as honestly as you can. Please do not guess the answers to the questions. This is not an exam so it is OK if you do not know the answer to some of the questions. If you really don't want to answer some of the questions you do not have to.

Do NOT put your name on this questionnaire. This way, no-one will know what you wrote. The questionnaire is anonymous. No individual student can be identified. When you have finished, please seal the questionnaire in the envelope provided.

Answer each question by putting a ✓ in the appropriate box or boxes.

For example: Is Australia a good place?

[If you agree, you would ✓ the 'Yes' box as shown here.]

Yes ☑
No ☐☐
I'm not sure ☐☐

1. Are you?

   Male ☐☐
   Female ☐☐

2. How old are you? ____ years

3. Which year are you in at school?

   Year 9 ☐☐
   Year 11 ☐☐

4. In what country were you born? _____

5. If you were not born in Australia,
how long have you lived here? _____ years

6. Are you of Aboriginal or Torres Strait Islander origin?

No ☐☐

For persons of both Aboriginal and Torres Strait Islander origin, please ✓ both 'Yes' boxes.

Yes, Aboriginal ☐☐

Yes, Torres Strait Islander ☐☐

7. In what country was your **mother** born? _____

8. In what country was your **father** born? _____

9. Which language is mainly spoken in your home? _____

10. What is the **name** and **postcode**
of the place where you live? _____

[redacted]

11. For each of the following statements, state YES, NO or DON'T KNOW.

Please don't guess the answer, if you don't know ✓ that box

	Yes	No	Don't know
Hepatitis C can be transmitted by unsterile tattooing or body piercing	☐☐	☐	☐☐
Sexual contact is the most common way of transmitting hepatitis C	☐☐	☐☐	☐☐
Sharing razors or toothbrushes can transmit hepatitis C	☐☐	☐	☐☐
It is possible to be vaccinated against hepatitis A	☐☐	☐	☐☐
It is possible to be vaccinated against hepatitis B	☐☐	☐☐	☐☐
It is possible to be vaccinated against hepatitis C	☐☐	☐	☐☐
For most people, hepatitis C infection has no long term effects on health	☐☐	☐	☐☐
People who have injected drugs are not at risk for hepatitis C	☐☐	☐	☐☐
There is a successful treatment for hepatitis C	☐☐	☐	☐☐

12. Have you ever been vaccinated against hepatitis A?

Yes ☐ ☐

No ☐ ☐

Don't know ☐☐

13. Have you ever been vaccinated against hepatitis B?

Yes ☐☐

No ☐☐

Don't know ☐☐

14. Have you ever been vaccinated against hepatitis C?

Yes ☐☐
No ☐☐
Don't know ☐☐

[redacted]

15. Do you have any tattoos?

Yes ☐☐
No ☐☐ *If 'No', go to Question 18*

16. If yes, how many tattoos do you have? _____

17. If you have any tattoos, who did them?

If applicable, ✓ more than one.

A tattooist or person in a tattoo parlour ☐☐
Myself ☐☐
A friend, relative or acquaintance ☐☐
I have no tattoos ☐☐

18. Have you had any parts of your body pierced?

If applicable, ✓ more than one.

Yes, my ear or ears ☐☐
Yes, other parts of my body ☐☐
No, never ☐☐ *If 'No', go to Question 21*

19. If yes, how many piercings do you have? _____

20. If you have any piercings, who did them?

If applicable, ✓ more than one.

A doctor or health professional ☐☐
A worker in a piercing studio ☐ ☐
A worker in a chemist ☐☐
A beautician or hairdresser ☐☐
Myself ☐☐
A friend, relative or acquaintance ☐☐
I have no piercings ☐☐

21. Which of these sexual experiences or desires have you had?

If applicable, ✓ more than one.

I have had sexual experience with a male/s ☐☐
I have had sexual experience with a female/s ☐
I would like to have sexual experience with a male/s ☐☐
I would like to have sexual experience with a female/s ☐☐
None of the above ☐☐

22. How likely do you think you are personally to get hepatitis B infection?

Very unlikely	☐☐
Unlikely	☐☐
Likely	☐☐
Very likely	☐☐☐ *If 'Likely' or 'Very likely', go to Question 24*

23. If you answered VERY UNLIKELY or UNLIKELY to Question 22 (above), why do you think so?

Please ✓ as many reasons as you think apply.

Hepatitis B is not a problem in Australia	☐☐
I am too young to get hepatitis B	☐☐
I have never had sex	☐☐
I don't inject drugs	☐☐
I don't share needles and syringes to inject drugs	☐☐
I don't share other drug injecting equipment	☐☐
I keep away from people I think have hepatitis B	☐☐
People from my religious background don't get hepatitis B	☐☐
People from my cultural background don't get hepatitis B	☐
Hepatitis B is not very infectious	☐☐
I have been vaccinated against hepatitis B	☐☐
None of these reasons	☐

24. If you answered LIKELY or VERY LIKELY to Question 22 (above), why do you think so?

Please ✓ as many reasons as you think apply.

Hepatitis B is a problem in Australia	☐☐
I am of the age where people get hepatitis B	☐☐
I have sex	☐☐
I inject drugs	☐☐
I share needles and syringes to inject drugs	☐☐
I share other drug injecting equipment	☐☐
I know a lot of people with hepatitis B	☐☐
People from my religious background get hepatitis B	☐☐
People from my cultural background get hepatitis B	☐☐
Hepatitis B is very infectious	☐☐
I have *not* been vaccinated against hepatitis B	☐☐
None of these reasons	☐☐

25. How likely do you think you are personally to get hepatitis C infection?

Very unlikely		☐☐	
Unlikely	☐	☐	
Likely		☐☐	
Very likely	☐	☐	*If 'Likely' or 'Very likely', go to Question 27*

26. If you answered VERY UNLIKELY or UNLIKELY to Question 25 (above), why do you think so?

Please ✓ as many reasons as you think apply.

Hepatitis C is not a problem in Australia	☐☐
I am too young to get hepatitis C	☐☐
I have never had sex	☐☐
I don't inject drugs	☐☐
I don't share needles and syringes to inject drugs	☐☐
I don't share other drug injecting equipment	☐☐
I keep away from people I think have hepatitis C	☐☐
People from my religious background don't get hepatitis C	☐☐
People from my cultural background don't get hepatitis C	☐☐
Hepatitis C is not very infectious	☐☐
I have been vaccinated against hepatitis C	☐☐
None of these reasons	☐☐

27. f you answered LIKELY or VERY LIKELY to Question 25 (above), why do you think so?

Please ✓ as many reasons as you think apply.

Hepatitis C is a problem in Australia	☐☐
I am of the age where people get hepatitis C	☐☐
I have sex	☐☐
I inject drugs	☐☐
I share needles and syringes to inject drugs	☐☐
I share other drug injecting equipment	☐☐
I know a lot of people with hepatitis C	☐☐
People from my religious background get hepatitis C	☐☐
People from my cultural background get hepatitis C	☐☐
Hepatitis C is very infectious	☐☐
I have *not* been vaccinated against hepatitis C	☐☐
None of these reasons	☐☐

28. Have you ever been diagnosed with any kind of hepatitis?

Yes	☐☐	
No	☐☐	
Don't know	☐☐	*If 'No' or 'Don't know', go to Question 30*

29. If yes, what **type** or **types** of hepatitis?

Hepatitis A	☐☐
Hepatitis B	☐☐
Hepatitis C	☐☐
Another form of hepatitis	☐☐
Don't know	☐☐

30. Which of the following would you like to give you information about hepatitis?

Please ✓ as many as apply.

My doctor	☐☐
Another doctor	☐☐
Other health professionals	☐☐
School teachers	☐☐
School counsellors	☐☐
Youth workers	☐☐
Parents	☐☐
Friends	☐☐
Hepatitis telephone helpline	☐☐
Television	☐☐
Internet	☐☐
Newspapers and magazines	☐☐
Brochures	☐☐
None of these	☐☐

You have now completed the survey.
Please put it in the envelope provided and then seal the envelope.

Thank you

Appendix B

Basic Sampling Theory for Simple and Cluster Samples

For any survey aiming to produce population estimates from the sample data, the focus of the design must be on the magnitude of the standard errors of sampling rather than on an arbitrary percentage of the target population. The standard errors are used to calculate confidence intervals around the sample data. Most of results are expressed as percentages (proportions) for which the standard error is defined as:

$$se(prop) = \sqrt{[p(1-p)/n]}$$

Calculations are usually based on p=0.50 since the standard error decreases as the proportion increases towards 1.0 (or symmetrically decreases toward 0.0). The standard error may be multiplied by a finite population correction of $\sqrt{(N-n)/N}$ to improve the estimate, but this is only of practical importance where the sample is a large proportion of the target population.

$$se(p50) = \sqrt{[0.50(1-0.50)/n]}$$

The usual confidence intervals are determined at the 95 per cent level corresponding to 1.96 standard errors of sampling for a proportion. The following table shows the standard errors and confidence intervals (95 per cent probability) for proportions close to 0.50 for a range of sample sizes.

Size	se(p50)	lower 95ci	upper 95ci
100	0.050	0.402	0.598
200	0.035	0.431	0.569
500	0.022	0.456	0.544
1000	0.016	0.469	0.531
2000	0.011	0.478	0.522

For a two-stage design, schools are selected at the first stage with a probability proportional to the size of the target population in each school. At the second stage of sampling, a random cluster of students is selected at random from each of the schools. This sample is less efficient than a simple random sample (srs) of the same size. The efficiency of a complex sample is measured by the design effect (deff), which compares the variance errors of sampling for a complex sample and a simple random sample of the same size. The variance error of sampling is the square of the standard error of sampling.

deff = (standard error of sampling for complex sample)2 / (standard error of sampling for srs)2

The square root of deff is deft, which gives the ratio of the standard errors of sampling.

deft = (standard error of sampling for complex sample) / (standard error of sampling for srs)

One way to estimate the standard error of sampling for a given cluster sample is to calculate the size of its simple equivalent sample (ses) or effective sample (neff); that is, the size of a simple random sample which has the same standard error as the complex sample. The calculations for standard errors are then based on the size of the simple equivalent sample.

size of simple equivalent sample = size of complex sample / deff

The calculation of deff requires knowledge of the extent to which the clusters display homogeneity with respect to the variables being investigated, measured by the intraclass correlation (rho). It is also necessary to know the mean size of the clusters (b). For example, for a complex sample with an intraclass correlation of 0.10 and a mean cluster size of 20, the design effect is given by:

deff = 1 + (rho)(b-1) = 1 + (0.10)(20-1) = 2.9

For a complex sample with 50 schools and 20 students per school, the size of simple equivalent sample is:

nses = n / deff = 1000 / 2.9 = 345

For a simple random sample of n=1000, the 95 per cent confidence interval is given by:

$\pm$ 1.96 se(p50) = $\pm$ 1.96 $\sqrt{}$[0.50(1-0.50)/1000] = $\pm$ 0.031 = $\pm$ 3.1%

For a simple equivalent sample of n=345 (corresponding to a complex sample of n=1000), the 95 per cent confidence interval is given by:

$\pm$ 1.96 se(p50) = $\pm$ 1.96 $\sqrt{}$[0.50(1-0.50)/345] = $\pm$ 0.053 = $\pm$ 5.3%

The following table shows the values for deff and the simple equivalent sample for a variety of sample designs, showing clearly the importance of having sufficient schools at the first stage of sampling.

Example	schools	students	total	rho	Deff	ses
1	50	20	1000	0.05	1.95	513
2	50	20	1000	0.10	2.90	345
3	50	20	1000	0.20	4.80	208
4	20	50	1000	0.05	3.45	290
5	20	50	1000	0.10	5.90	169
6	20	50	1000	0.20	10.80	93

The underlying probability theory assumes that the students at the second stage of sampling are selected as a random cluster that is the same size for each school. The members of the cluster are drawn at random from all the students in the target population at that school. In practice, it is often convenient to draw an intact class at random. However, this results in slightly less control over the size of the random cluster, and will usually increase the intraclass correlation for the sample.

It is unlikely that the achieved samples for the different strata will properly represent the proportions of persons in the target populations for the strata. To adjust this situation weights are applied so that the achieved sample for each stratum represents its proportion in the total target population.

$$wh = Nh/nh$$

where

nh = the size of the achieved sample for the stratum

Nh = the size of the target population for the stratum

Appendix C

Target population enrolments

Tables 18 and 19 show the enrolments statistics for Years 9 and 11 taken from the sampling frame maintained by Survey Design and Analysis Services Pty Ltd. The data are 1998 ABS census data (August 1998). The tables show the total number of schools and students, and also the number of schools and students where there are more than 20 students at the relevant year levels.

Table 18 : Target population enrolments by health regions — Year 9

	Schools Year 9 any students	Students Year 9	Schools Year 9 >20 students	Students Year 9
Metropolitan				
Central Coast	15	2884	15	2884
Sydney Eastern Southern	33	4386	33	4386
Sydney Greater Central	19	2176	19	2176
Sydney Northern	35	4843	34	4842
Sydney South Western	54	8844	54	8844
Sydney Western	35	4774	35	4774
Wentworth	18	3221	18	3221
Subtotal	209	31128	208	31127
Non-Metropolitan				
Far West	13	538	7	493
Greater Murray	37	2763	29	2677
Hunter	32	5114	32	5114
Illawarra	20	3381	20	3381
Macquarie	20	1186	15	1148
Mid North Coast	21	3039	21	3039
Mid Western	24	1766	17	1684
New England	28	1998	22	1937
Northern Rivers	21	2833	21	2833
Southern	17	1752	17	1752
Subtotal	233	24370	201	24058
Total	**442**	**55498**	**409**	**55185**

Table 19 : Target population enrolments by health regions — Year 11

	Schools Year 11 any students	Students Year 11	Schools Year 11 >20 students	Students Year 11
Metropolitan				
Central Coast	14	1913	14	1913
Sydney Eastern Southern	33	4016	33	4016
Sydney Greater Central	19	2055	18	2035
Sydney Northern	35	4833	35	4833
Sydney South Western	54	6636	53	6619
Sydney Western	35	3581	35	3581
Wentworth	19	2429	19	2429
Subtotal	209	25463	207	25426
Non-Metropolitan				
Far West	11	285	3	223
Greater Murray	36	1965	25	1844
Hunter	32	3420	31	3403
Illawarra	21	2339	21	2339
Macquarie	16	731	10	658
Mid North Coast	21	2058	21	2058
Mid Western	24	1202	15	1120
New England	24	1494	20	1462
Northern Rivers	21	2099	19	2064
Southern	17	1277	15	1241
Subtotal	223	16870	180	16412
Total	**432**	**42333**	**387**	**41838**

Appendix D

Allocation of sample schools based on the percentage of students in the regional strata

Table 20 shows the allocation of sample schools based on the percentage of students in the regional strata.

Column 4 shows the percentage of students in the metropolitan and non-metropolitan areas separately.

Column 5 shows the allocation of schools as a proportion within each area.

Column 6 shows the actual number of schools (rounded).

Column 7 shows the total sample size (Years 9 + 11).

When results for the study are calculated for NSW overall, weighting adjustments must be applied to correct the disproportionalities arising from the oversampling in the sample design and differential response rates across strata.

Table 20 : Sample

	1 **Students Years 9+11**	2 **Students %**	3 **Schools propn**	4 **Schools actual**	5 **Students sample**
Metropolitan					
Central Coast	4797	8.5%	3.1	3	120
Sydney Eastern Southern	8402	14.9%	5.5	5	200
Sydney Greater Central	4211	7.4%	2.8	3	120
Sydney Northern	9675	17.1%	6.3	6	240
Sydney South Western	15463	27.3%	10.1	10	400
Sydney Western	8355	14.8%	5.5	6	240
Wentworth	5650	10.0%	3.7	4	160
Subtotal	56553	100.0%	37	37	1480
Non-Metropolitan					
Far West	716	1.8%	0.7	1	40
Greater Murray	4521	11.2%	4.2	4	160
Hunter	8517	21.0%	8.0	8	320
Illawarra	5720	14.1%	5.4	5	200
Macquarie	1806	4.5%	1.7	2	80
Mid North Coast	5097	12.6%	4.8	5	200
Mid Western	2804	6.9%	2.6	3	120
New England	3399	8.4%	3.2	3	120
Northern Rivers	4897	12.1%	4.6	4	160
Southern	2993	7.4%	2.8	3	120
Subtotal	40470	100.0%	38	38	1520
Total	97023			75	3000

Appendix E

Sampling errors

Table 21 shows the estimated standard errors of sampling for the regions and for NSW overall for the Year 9 sample based on an assumed achieved class size of 20 students. The calculation of standard errors incorporates a finite population correction adjustment. The tables use an assumed value of 0.05 for the intraclass correlation (rho) so that the design effect (deff) is given by:

deff = 1 + (rho)(b-1) = 1 + (0.05)(20-1) = 1.95

Column 3 shows the "simple equivalent sample", which is the size of random sample for which the cluster sample has an equivalent sampling error, given for the first row in the table by:

ses = n/deff = 120/1.95 = 61

Column 4 shows the standard error of sampling for a proportion close to 0.50 (50%).

Columns 5 and 6 show the lower and upper confidence intervals at a probability level of 95%.

Table 21 : Sampling errors Year 9

	1 **Students Year 9**	2 **Students sample**	3 **Students ses**	4 **se(p50)**	5 **ci95 lower**	6 **ci95 upper**
Metropolitan						
Central Coast	2884	120	62	0.062	0.378	0.622
Sydney Eastern Southern	4386	200	103	0.048	0.405	0.595
Sydney Greater Central	2176	120	62	0.062	0.379	0.621
Sydney Northern	4842	240	123	0.044	0.414	0.586
Sydney South Western	8844	400	205	0.034	0.433	0.567
Sydney Western	4774	240	123	0.044	0.414	0.586
Wentworth	3221	160	82	0.054	0.395	0.605
Subtotal	31127	1480	759	0.018	0.465	0.535
Non-Metropolitan						
Far West	493	40	21	0.106	0.293	0.707
Greater Murray	2677	160	82	0.054	0.395	0.605
Hunter	5114	320	164	0.038	0.426	0.574
Illawarra	3381	200	103	0.048	0.406	0.594
Macquarie	1148	80	41	0.075	0.352	0.648
Mid North Coast	3039	200	103	0.048	0.406	0.594
Mid Western	1684	120	62	0.061	0.380	0.620
New England	1937	120	62	0.062	0.379	0.621
Northern Rivers	2833	160	82	0.054	0.395	0.605
Southern	1752	120	62	0.062	0.379	0.621
Subtotal	24058	1520	779	0.017	0.466	0.534
Total	**55185**	**3000**	**1538**	**0.012**	**0.476**	**0.524**

Table 22 shows the corresponding sampling errors for the Year 11 sample.

Table 22 : Sampling errors Year 11

	1 **Students Year 11**	2 **Students sample**	3 **Students ses**	4 **se(p50)**	5 **ci95 lower**	6 **ci95 upper**
Metropolitan						
Central Coast	1913	120	62	0.062	0.379	0.621
Sydney Eastern Southern	4016	200	103	0.048	0.406	0.594
Sydney Greater Central	2035	120	62	0.062	0.379	0.621
Sydney Northern	4833	240	123	0.044	0.414	0.586
Sydney South Western	6619	400	205	0.034	0.434	0.566
Sydney Western	3581	240	123	0.044	0.415	0.585
Wentworth	2429	160	82	0.053	0.395	0.605
Subtotal	25426	1480	759	0.018	0.465	0.535
Non-Metropolitan						
Far West	223	40	21	0.100	0.304	0.696
Greater Murray	1844	160	82	0.053	0.397	0.603
Hunter	3403	320	164	0.037	0.427	0.573
Illawarra	2339	200	103	0.047	0.407	0.593
Macquarie	658	80	41	0.073	0.357	0.643
Mid North Coast	2058	200	103	0.047	0.408	0.592
Mid Western	1120	120	62	0.060	0.382	0.618
New England	1462	120	62	0.061	0.380	0.620
Northern Rivers	2064	160	82	0.053	0.396	0.604
Southern	1241	120	62	0.061	0.381	0.619
Subtotal	16412	1520	779	0.017	0.467	0.533
Total	**41838**	**3000**	**1538**	**0.012**	**0.476**	**0.524**