Vaccine for VD on the way

A RESEARCH TEAM in Microbiology believe it is well on the way to developing an effective vaccine against the world's most common bacterial infection, gonorrhea.

At present gonorrhea is easy to treat with antibiotics, but more and more resistant strains are appearing, so a vaccine could become very important.

Also, the characteristic symptoms of the disease are rarely obvious in women and, if it is left untreated, it can cause serious complications, such as PID (pelvic inflammatory disease), fallopian tube infections, fetal meningitis and birth defects in babies born to infected mothers.

Leader of the research team, Dr John Davies, said: "People don't realise gonorrhea can cause such a spectrum of other diseases and problems, so it doesn't command the respect it should."

Even when treatment was sought, the speed with which the antibiotics take effect lulled patients into a false sense of security, he said. Reinfection often occurred because prescribed antibiotic courses were not completed.

Davies thinks it is likely to be more than a year until any vaccine is developed to the stage where it can begin to be tested. In 1963, it was found that gonorrhea bacteria occur in two different forms, only one of which causes the disease. The two forms are easy to distinguish under the electron microscope by the long, thin tentacles characteristic only of the disease-causing or pathogenic form.

"Those without these structures are killed off by the body's immune system fairly quickly," Davies said. The tentacles, called pili, are composed of proteins.

"The gonorrhea bug is very unusual in that it's capable of playing with the gene sequences for each pilus. This swapping and changing alters the protein structure and this confuses the body's immune system," Davies said.

What this swapping, or antigenic variation means in practice is that gonorrhea bacteria constantly change from one strain into another. Similarly, non-piliated bacteria can become piliated and hence pathogenic. This is known as phase change.

Our immune system swings into action when an alien chemical compound enters the body. The invasion stimulates the production of antibodies to neutralise the effect of that compound.

A vaccine contains molecules of similar chemical makeup to those characteristic of the disease against which it protects. This similarity allows the body to produce antibodies capable of acting against infection by the disease.

For many years scientists have believed that gonorrhea is caused when pilin proteins bind to receptors on cell membranes. The confusion created by antigenic variation means the body's immune system has difficulty producing the necessary antibodies to counter this.

So, until now, development of vaccines has centred around minimising this confusion and blocking the pilin proteins from binding to the receptors.

Davies, however, has come up with a theory on how the bacteria bind to the receptors, which differs considerably. "I went to Sweden about ten years ago to do postdoctoral research. While there I learnt of work being done on how piliated E. coli bacteria bind to their receptors."

Scientists had made the same assumption with E. coli as they had with gonorrhea — that the pilin proteins attached to the receptor. "What these Swedish researchers discovered was that for every 1000 or so molecules of pilin protein in the pili there was also a minor protein.

"And it was this minor protein which attached itself to the receptor to cause infection. When the minor protein was removed, a bacteria became avirulent — it could not cause infection," Davies said.

So he began to investigate the pili of gonorrhea bacteria to determine if they had minor proteins which functioned in a similar manner. "We've uncovered four or five previously unidentified proteins, but we don't know yet whether they perform in the same way as the E. coli minor proteins," Davies said.

"We still have to purify these minor proteins to discover which, if any, are binding to the receptors. At the moment we aren't even sure what sort of proteins we're looking at. But this will be a straight genetic engineering exercise, all it requires is patience and perseverance," he said.

One final problem will be testing the end product. "Humans are the only reservoir for gonorrhea. So any tests of the vaccine have to be conducted on volunteer human guinea pigs. Most of this sort of testing is done in the United States, and that's probably where our vaccine will also be sent for testing," Davies said.

Davies' research has been supported by a grant from the National Health and Medical Research Council and a Monash Special Research Grant.
Resolving arguments without getting court

Commercial disputes involving thousands of millions of dollars in Australia usually mean lengthy court battles which attract intense media scrutiny.

Not so a recent disagreement between Esso-BHP and Weeks Petroleum over royalties from Bass Strait oil wells. The first that most people heard of it was when settlement was announced to the Melbourne Stock Exchange.

That was because the companies decided not to use the open courts. Instead, they chose to plug it out at Melbourne's Australian Centre for International Commercial Arbitration (ACICA).

ACICA is one of two Australian alternative dispute resolution centres for commercial matters. The other is Sydney's Australian Commercial Disputes Centre (ACDC). They are part of a growing worldwide trend.

And that is why the Monash Centre for Commercial Law and Applied Legal Research has just begun a year-long study into alternative dispute resolution in Australia. It will be undertaken by Mr Julian Riekert, formerly the director of a non-government mediation service for labor disputes in South Africa.

Riekert said the widest definition of alternative dispute resolution included every means of settlement other than through the courts. For the purposes of the project, however, it will be taken to mean all forms of resolution which leave the outcome in the hands of the disputing parties, he said.

"Alternative dispute resolution seems to be an idea which can be used in commercial disputes, including international disputes. It can be quick, cost-effective, held on neutral ground and the settlement can be put in the form of a contract enforceable through the courts."

"But it avoids the adversarial atmosphere of a formal court, which can damage a commercial partnership. In fact, the Chinese and Japanese consider it a failure to do business properly if they have to resort to a court."

The research project will look at who is using alternative dispute resolution in Australia, what is being done with it, what forms are being used and when they are most effectively applied.

"Alternative dispute resolution includes a whole range of processes all of which begin with negotiation. The next stage might be to call in neutral, professional negotiators to see if they can get around any roadblocks."

Then there are mediation and conciliation. Both involve the use of an impartial go-between to help the parties reach their own agreement, the difference being that in conciliation the go-between actually makes recommendations as to how the dispute should be resolved.

"The parties are still free to accept or reject the advice, but the opinion of the jointly-appointed conciliator has strong persuasive power. The eventual settlement might be unjust in the strictest moral sense, but the important thing is that the parties are happy with it."

Next comes the mini-trial, a highly structured information exchange which takes place in limited time. Each side appoints an advocate to argue the best possible case before a board of one very senior executive from each of the companies in dispute, together with a neutral adviser.

"It uses a bit of the court process to expose the strongest and weakest parts of each side's case, but the settlement is still in the companies' hands. After they have heard the case and the adviser's opinion the executives go away to negotiate an agreement."

Finally, there is arbitration, where the parties pay for the services of an arbitrator who brings down a decision which is binding.

The cost quoted for arbitration of the Bass Strait oil well dispute was between $5 and $7 million. For that, the companies bought privacy, the services of three top international jurists, and a final decision within five months.

Riekert said he had been told that the price was small, in relation to the amount in dispute and compared with the cost in business uncertainty of a court battle that, on appeal, could drag on for years.

The research work will be in two parts. Riekert is devising a questionnaire on attitudes to alternative dispute resolution to be sent to selected corporations and their in-house and external legal consultants.

And throughout the year he will be monitoring disputes going through alternative resolution, asking the participants how they assess the process. Through both methods, he hopes to gain an indication of the most appropriate techniques for particular kinds of disputes.

He said that sometimes companies wanted to establish a binding precedent, and so would go to the courts for a ruling. In other cases, such as a dispute between partners involved in an ongoing development project, it was important to get things settled as quickly as possible and in a way which made it possible for the parties to keep working together. Here, an adversarial court system would be at a disadvantage.

Alternative dispute resolution is also potentially very lucrative, if Australia can establish itself internationally as a neutral and effective centre for settling commercial disagreements.

"International trade contracts often specify an arbitration centre — usually London or Paris — if disputes arise." In 1984 alone, it has been estimated that disputes resolution brought more than $60 million into the City of London.

For further information, contact Mr Julian Riekert at the Centre for Commercial Law and Applied Legal Research on 565 3374.
Drugs linked with poor: survey

A survey of 80 Melbourne pharmacies by staff and students of the Monash Department of Social and Preventive Medicine has found demand for needles and syringes by suspected drug users is significantly higher in poorer areas.

The survey, which was conducted primarily to monitor the role of pharmacists in helping to prevent the spread of AIDS amongst intravenous drug users, showed that demand was clearly highest in Melbourne’s northern and western suburbs.

It also found a 20 times better than normal chance that a pharmacy in the top third as regards demand for needles and syringes, would be located in the least privileged third of local government areas as ranked on the basis of an index devised by Dr Ken Ross of Deakin University.

The co-ordinator of the project, Dr John Powles, said the results of the survey seemed to be clear evidence against the idea that intravenous drug use in Melbourne was a middle-class phenomenon.

Victorian pharmacists were urged by the National AIDS Task Force in September 1986 to consider selling needles and syringes in accordance with a policy recently adopted by the Pharmaceutical Society of Australia.

The idea was to try to minimise the spread of AIDS among intravenous drug users through sharing of needles. Nearly half the pharmacists surveyed said they were willing to sell needles or syringes to drug users.

A report of the work published in the latest issue of the Community Health Studies (Volume XI, Number 3) concludes: "The most plausible interpretation of our findings is that they reflect the underlying distribution of intravenous drug use. In our data such use is clearly more common in less advantaged areas."

"Whether users originally resided in these areas or moved there after becoming dependent cannot be determined from this data. However, if intravenous drug-using residents of the affluent eastern suburbs were to move in search of a more 'anonymous' environment, it is more likely that they would move to the inner than to the northern and western suburbs."

An earlier paper, published in the September issue of the Australian Journal of Pharmacy, focused on the pharmacists themselves. It reported that the most common reason pharmacists gave for not selling needles and syringes was apprehension at the possible behavior of drug users — that such people might become aggressive in the shop and frighten off business or come back later to steal.

In contrast, very few of those selling needles and syringes reported problems with drug users.

Other reasons pharmacists gave for not selling included uncertainty as to the legal implications, and professional concern about the misuse of drugs.

The report recommended that all pharmacists be reassured that it was both ethical and legal to sell needles and syringes to drug users — and that it could be a valuable contribution to the control of AIDS. It also suggested that those pharmacists who were not selling should be informed that there appeared to be little basis for worrying about the behavior of drug users.

The survey data was gathered in a series of 10 to 15 minute interviews by six third year students from the Monash Medical School. A systematic sample of 96 pharmacies was drawn from those located in the Melbourne metropolitan area and listed with the Pharmacy Board of Victoria. Usable information was obtained from 83 of the pharmacies.

This research project was carried out by students, John Croatto, Fiona Ewart, Carolyn Harrison, Kui Sim, Henryk Siruk and Bernadette Wise; biostatistician, Bridget Hage; lecturer, Dr Graeme Oliver; and senior lecturer, Dr John Powles.

Demand for Needles and Syringes by Local Government Area

- Low
- Average
- High
- No pharmacies sampled

Mean Demand/Pharmacy/Week

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Pure research leads to concrete results
Analysis increases building safety

A MONASH ENGINEER’S theoretical study of the behavior of concrete beams under severe loads could lead to safer buildings.

But already the research has resulted in the development of a cheap and efficient inclinometer, a scientific instrument which measures tilt or inclination. It has widespread application in engineering and the information it provides can be crucial to safety.

The CDP Inclinometer can measure rotations of up to 20 degrees from the horizontal or vertical and gives a digital readout. It is lightweight and portable and has been designed so that several can be used together in a dense array providing instant and detailed information about the deformation of structures and such things as slope or dam stability.

But the inclinometer originally was designed to monitor the changes occurring in concrete beams under increasing load, to aid the work of reader in Civil Engineering, Dr Peter Darvall. Darvall has developed a new and rational theory which allows analysis of the way concrete beams collapse.

“The analysis applies to every concrete structure in the calculation of its limit load. There are lots of structural implications, and there has been a great deal of international interest in the work.”

According to Darvall’s theory, concrete beams go through three behavioral phases. Initially, in the elastic phase, although beams deform or bend under load, they snap back into position once the load is removed. As the load increases, the beams go into a plastic phase where deformation becomes permanent, but the strength of the beam is maintained. Finally, in the softening phase, the deformation of the concrete increases even when the load is decreasing.

It is the description and analysis of concrete softening that Darvall and his students have pioneered. “The necessary input to collapse analyses of concrete structures must include softening, and it has been totally ignored in the past.”

The most direct application of the work will be in the construction of concrete frame buildings in earthquake prone areas. In fact, it was in such a zone that the full significance of softening struck Darvall.

“I was invited for a six month visit to the University of Mexico, where I knew they had a tremendous research institute into concrete structures. It was 1976 when an earthquake killed 25,000 in Guatemala and also knocked the southern states of Mexico.

“I travelled for several weeks with another engineer assessing and categorising damage. Many concrete frame structures had collapsed or were seriously damaged — the shops, offices and public buildings in the important cities. Deformation had gone far beyond the plastic region. Until then I had only known of concrete softening as a laboratory phenomenon.”

Darvall began pilot experiments in the late '70s on the pattern of the curvature of concrete beams under increasing deformation, and the factors affecting the initiation and severity of softening. His first paper on the topic appeared in 1980. But it was on study leave at the University of Wisconsin in 1982 that he worked out the theoretical implications and determined his method of analysis.

Proper detailed study of the region where softening occurs was made possible by the development of two machines, the inclinometer, which was designed by the chief technical officer in the Department of Civil Engineering, Mr Chris Powell, and the displacement control load machine, a testing machine of the microprocessor age.

In order to study softening, it is not possible simply to take a beam and keep increasing the load on it at a constant rate. Increased load at the point when it starts to weaken will rapidly crack and break it, thus precluding further study.

The displacement control load machine monitors the deformation of the beam itself, and adjusts the load so that deformation increases at a constant rate, allowing useful measurement in the softening phase to take place. It relies on sensors feeding information back to a microcomputer which acts by controlling the load.

The area which is most prone to softening and cracking is where the concrete bends and is known as the hinge. In concrete frame buildings hinging invariably tends to happen at the point where beams join columns.

Darvall and his students have subjected half scale models of standard beams to loads of more than ten tonnes to generate the data to flesh out and calibrate the theoretical analysis. They have studied both pre-stressed and reinforced beams to identify all categories of softening and collapse.

For instance, concrete beams normally are reinforced internally by longitudinal steel rods enclosed by hoops or ties known as stirrups. Beams are subject to compression near the top (where the load presses down) and to tension near the bottom. Studying deformation through concrete softening has allowed Darvall and his students to determine the influence of amount of longitudinal steel and stirrups on the severity of softening.

The experiments also have allowed calculation of the most effective spacing and sizes. The research group has even looked at what happens to beams under torsion or twisting.

In the US, consulting engineers use the philosophy that they should design buildings to ensure no structural damage in a mild earthquake. In a medium strength earthquake any structural damage should be repairable and cause no danger to human life, and in an extreme
Earthquake collapse should not occur.

But until now, Darvall says, the methods of analysing collapse loads in concrete frame buildings were irrational. "We never had a way of relating collapse loads of individual beams and columns to ultimate structural capacity of a building." After the concrete softens at one point, there is a redistribution of forces throughout the building, which could make it more resistant or more prone to further collapse.

In the past, when collapse analysis for concrete frame buildings did not take softening into account, one of two assumptions was made for the design of concrete structures in Australia. The conservative assumption was not to design beyond the limit of plastic phase of the concrete beams, so that buildings tended to be overdesigned to limit the load on individual beams. The non-conservative assumption was that beams were infinitely plastic and softening did not exist, so beams were reinforced and strengthened with stirrups to try to approximate that condition.

"Now we have a proper method of analysis, we can look at these historical buildings and assess their safety," Darvall said.

For further information on the CDP Inclinometer, ring Montech Pty Ltd on (03) 563 3038.

The project has been supported by the Monash Special Research Fund since 1985 and the Australian Research Grants Scheme since 1986. PhD students who have worked on the softening project include Priyamtha Mendis, David Tse, Gnananandan Sanjayan, Mak Swee Liang, Alfred Lee and John Foo.
Monash, company join in study of platinum drugs

THE UNIVERSITY, the Victorian Government, the Peter MacCallum Cancer Institute, and David Bull Laboratories (DBL) Pty Ltd have signed a three-year $79,000 agreement for research into the development of platinum-based anti-cancer drugs.

The teaching company agreement will support research by a post-doctoral fellow using facilities at both the university and the institute.

DBL, a wholly-owned subsidiary of Adelaide drug company F.H. Faulding Pty Ltd, specialises in producing drugs which are injected in small volumes and is Australia's only manufacturer of drugs lethal to cancer cells. Already, two platinum-based chemicals — Cisplatin and Carboplatin — are among its products.

In November the company, which employs about 200 including 10 research and development scientists, commissioned new production facilities worth $4.4 million at its factory in Mulgrave, about a kilometre from the university. The new area employs the latest technology and design to ensure sterile production of anti-cancer drugs.

It is reported that DBL already has $40 million worth of advance orders for the US market alone for the anti-cancer drugs to be manufactured in the new facilities.

At present the company exports about half what it makes to the UK, the Middle East, Southeast Asia, the Far East, New Zealand and Canada as well as the US. Soon this list will include continental Europe and South America.

The teaching company agreement will allow it to embark on a program of drug development, which would normally be beyond the resources of such a small company.

’The Monash supervisor of the project, chemist Dr Glen Deacon, who has had long experience of working with platinum, said: “David Bull could not afford the full-scale laboratories with attached biological testing facilities needed for drug synthesis.”

DBL’s research and development manager, Mr Alastair Young, said: “Pure research is generally too costly for a small company like DBL to undertake on its own. Full research and development of a new drug can cost in the region of $100 million. So the company’s present research effort has been concentrated on the developing of simple, high quality, value added products presented in a safe and convenient form for administration.”

The teaching company scheme was introduced by the Federal Government in 1984/85 and later in Victoria was expanded by the State Government through its Department of Industry, Technology and Resources. The idea was to provide money for research in industry to be carried out by postgraduate students, thus bridging the gap between tertiary institutions and industry.

Projects are financed jointly by government and the company for which the research is being done — in this case, the Victorian Government is providing $52,000 and DBL $45,000.

The biological activity of platinum was discovered by accident. Cisplatin has been in clinical use since 1977, and is particularly effective against testicular cancer in young men, a condition that was previously almost always fatal.

Although no detailed mechanism has been proposed for its ability to poison cancer cells, it normally is assumed that the drug binds to the genetic material inside cells and interferes with its operation. This means Cisplatin should be particularly lethal to cells which are dividing abnormally rapidly, such as cancer cells.

Unfortunately, as with many chemotherapeutic drugs, Cisplatin’s action is not restricted to cancerous cells. Among its more unpleasant side effects are kidney damage, diarrhoea and vomiting, and these can cause enough discomfort to discourage patients from taking it a second time. So the hunt has been on for a substitute.

Young said that Carboplatin is just as effective, but has milder side effects. It was developed locally by the Institute of Drug Technology (Aust) Pty Ltd and has been put on the market only recently. Further improvement is possible, he said, and there is a large potential market for similar drugs.

A worker in protective clothing in DBL’s new production facilities

THE MONTECH FILE

Engineers seeking industry link for expert systems

ONLY IN THE past five years have engineers seriously begun to apply expert systems to their work, but already Monash has developed expertise in the area.

Expert systems are interactive computer programs, which are an important step on the way to artificial intelligence and more sophisticated automation.

For example, projects underway at the university include building software to help time machine maintenance and to plan detailed master production schedules for manufacturing industries. Expert systems, however, can be used in many narrow areas of expertise from diagnosing an illness to designing a computer chip.

But in order to expand knowledge of and research into applying expert systems and to help manufacturing industry keep up with the pace of automation, the university is looking for support in collaborative projects.

So, in association with Montech and the Graduate School of Management, Dr Joseph Mathew of Mechanical Engineering has organised a one-day, hands-on workshop in expert systems for manufacturing and production managers to be held at Monash on 9 December, 1987.

The idea is to introduce local companies to expert systems technology, to show its advantages and to demonstrate the university’s resources with a view to stimulating consulting and research and development work.

‘Expert systems use the computer to apply expert knowledge to solving real world problems. This expert knowledge can include facts, formal relationships and rules-of-thumb,’ Mathew said.

An expert system is built from a knowledge base — a series of facts linked together by rules — and a reasoning system which decides how to apply the rules and in what order.

Mathew said the usual design of an expert system was that of a decision-tree formed by linking a series of statements of an if . . . then . . . variety. The computer then can link these in a forward sense to draw planning inferences, or in a backward sense to diagnose a problem.
Business starting to show interest in new science park

Several national and international companies have expressed interest in building or leasing space in the Monash Science and Technology Park now being developed across Blackburn Road from the north-east corner of the university.

The companies, in the key high technology areas of biotechnology, information technology and electronics, will join university-inspired ventures, such as the Monash Biochemical Process Development Centre, in the park.

Roads and services for the six-hectare park are being installed at present. Detailed planning of the park's first building, to house the university's commercial arm, Montech Pty Ltd, as well as other companies, is expected to be completed by the end of the year. The first phase of the building should be finished next year.

The Montech Building will include a central core with general facilities, such as an eating area, seminar room and meeting room. From it, four wings will fan out, providing office and laboratory space for individual companies. The complex will look onto Martin Street, named for former Vice-Chancellor, Professor Ray Martin.

'The managing director of Montech, Dr Paul Hudson said: "The development of the park is a key element in the growth of the interaction between Monash and industry, and is consistent with the university's response to Federal and State Government policies.'

He said the presence of high technology, research and development companies adjacent to campus would have a substantial positive influence on the university, especially if collaborations occurred.

Montech Pty Ltd will manage the park and will provide a strong link between the university and business, assistance in technology transfer, management and business skills, and easy access to university resources.

The Centre for Research in Accounting and Finance, in conjunction with Montech Pty Ltd, is conducting a series of seminars entitled Business Law for Management.

These seminars will be of interest to individuals and companies concerned with company taxation and company law.

They are organised into two programs, the first on tax and the second on law. Each will be presented at the Australian Society of Accountants in Melbourne for one and a half hours on three consecutive Wednesday evenings beginning on 3 and 24 February, 1988 respectively.

The cost of each program is $75, with a 10 per cent discount for the two.

Also in February, the Centre, Montech and the Institute of Internal Auditors of Australia are sponsoring two two-day workshops entitled Auditing in an Electronic Data Processing Environment for Internal Auditors, and Audit Sampling.

The workshops will be held in the Menzies Building at Monash University, beginning on 22 and 24 February respectively. Each will cost $250, which will include materials, lunch and refreshments.

The two workshops will be run again at Normanby House as a single five-day workshop beginning 16 May, 1988 for a cost of $550. Accommodation at Normanby House can be arranged.

For further information, contact Associate Professor Greg Pount on 565 2310 or Montech on 565 4058.

Across the road from the Halls of Residence, roads and drainage are being constructed for the new Monash Science and Technology Park.
Sex is a taboo subject that becomes even more uncomfortable to discuss when children are involved. So, even at this most basic level, there is a problem with stirring society to help the victims of child sexual abuse.

It's now an established fact that in the majority of cases it's not strangers who are the danger, but abusers who are well known to the children. Yet, people prefer to think children are lying, rather than face the truth that dad or auntie or a neighbor is sexually abusing a child.

Let's get this straight from the start — children do not generally make these stories up. I suspect people prefer to think they do, rather than throwing into doubt the idea that the family is the safest environment in which to rear children.

But whereas once most people were more than willing to deny the extent and seriousness of the problem, community outrage is now bringing the subject out into the spotlight. Victoria, however, doesn't have the legal mechanisms to cope with child abuse, sexual or physical.

One major problem is the absence of mandatory reporting of abuse. I find it extraordinary that people in positions of trust, such as teachers or doctors, are not required to report when a child is being abused. I have seen children physically disfigured or permanently injured as a direct result of abuse, and yet there are adults who feel no moral obligation to report such abuse when a child confides in them.

Other problems in Victoria spring from a lack of adequate protective services for children. Those which do exist are understaffed, under-resourced and have an appallingly high staff turnover rate. This means the police do far more of the intervention work than they should.

And I've discovered a unique aspect to child abuse in Victoria. It only occurs between nine and five on weekdays, because they are the hours the protective services are open. Now I think that's scandalous.

There also remain large legal problems with bringing child abusers before the courts. In most cases charges are dropped before going to court because the child is considered too young to be a reliable witness or no physical evidence of sexual abuse is available.

One suggestion is to follow the English and American lead and videotape the initial interviews. This is a particularly important issue, as half the sexually abused children in my study are under the age of seven.

Where there is no direct evidence of sexual abuse, the child's plight is often uncovered when they eventually turn up pregnant or with a sexually transmitted disease. Those sorts of experiences can affect them for life. What's worse is that a sexual act, which might seem quite minor to the legal profession, is magnified in the eyes of a child because it is his or her father or brother who is doing it.

A parallel exists between rape victims and children who have been sexually assaulted. Both fear the inadequacy of the legal process and possible consequences and criticism. Many fathers who assault their children, for instance, use the child's natural fear of his or her father being imprisoned to keep them quiet.

Three theories predominate as to why adults should abuse children. The first suggests social factors are important — for example, being unemployed — and the kids are beaten up in frustration. The second concentrates on psychological trauma, such as feelings of inadequacy.

The third theory proposes that the children themselves actually provoke the attacks. I believe all these theories can be true, at least in part, in certain instances. Sexually abused children certainly learn to relate to people in a sexual manner, but this confuses cause and effect. These children learn to relate sexually only because that is the way they have been treated.

Very little research, however, has been conducted on the prevalence of child abuse in Australia, so we are tied to quoting American and English statistics. The danger is that these figures can be taken out of context, because we have no idea of the extent of the problem in Australia. It's a vicious circle.

There also can be a sexual component to physical abuse. For example, I've seen children who have had their genitals burnt. Is that sexual or physical abuse?

To help overcome this lack of local data, I'm beginning a small hospital-based study into general child abuse in Victoria.

At the moment hospitals, the police and welfare services all collect their own data, but there's no exchange of information. The set of data which the Monash Social Work Department is compiling will be available to all these organisations.

The Victorian Law Reform Commission hopes to use my results in mid-1988 in its report to State Parliament on how the laws governing child sexual abuse should be altered.