

ISSUE 01: DECEMBER 2006

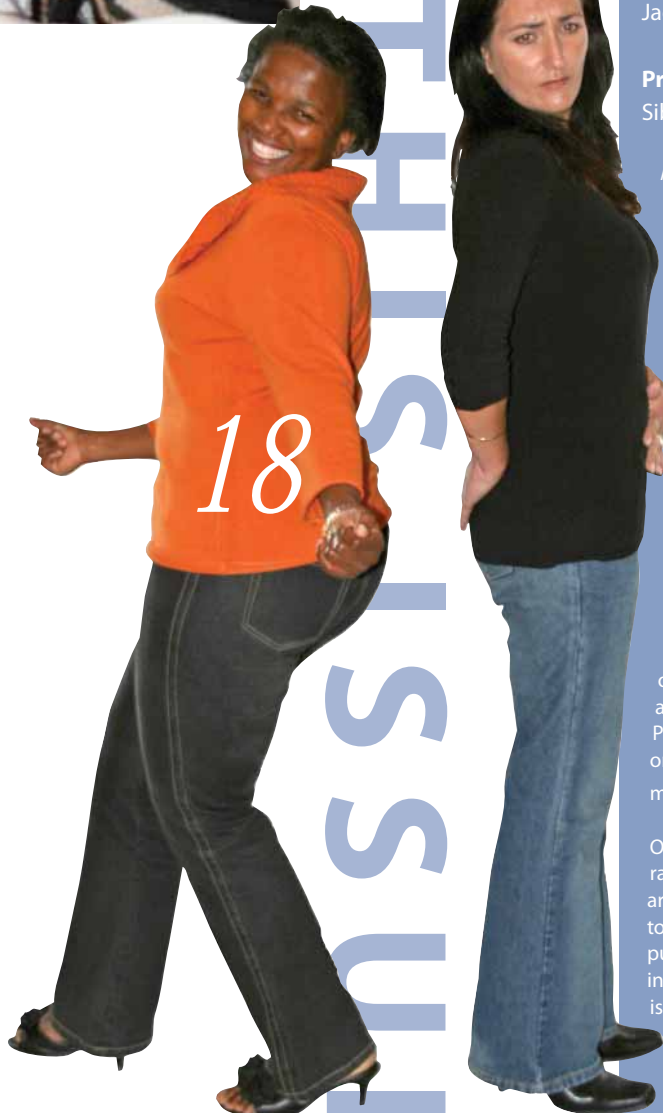
MRC news

THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL NEWSLETTER



BUILDING A HEALTHY NATION
THROUGH RESEARCH





INSIDE THIS ISSUE

contents

What should children eat?	4
Healthy habits start at school	7
Drinking during pregnancy	8
Breast is best – but what about HIV?	10
Stripped: The story of lead in paint in SA	12
Bigger but not better	14
Obesity in urban women	18
The best evidence says ...	20
Throwing the book at drugs	22
Reprint list	24
Getting to know Prof Mbewu	26
Annual Report Release	27

MRC News is a publication of the South African Medical Research Council (MRC) and is produced by the MRC's Corporate and Public Affairs Directorate.
www.mrc.ac.za

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Printing
Sibanye Print

MRC News aims to inform the public and other stakeholders about the South African Medical Research Council's research outputs and policy, as well as the outputs of MRC-supported research.

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MRC News is available free of charge. To subscribe, send an email to lkoza@mrc.ac.za. Previous issues can be viewed on www.mrc.ac.za/mrcnews/mrcnews.htm.

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W

We are proud to finally bring out this edition. It has indeed been a labour of love for all of us within the Corporate & Public Affairs Directorate. As you can see we have indeed changed our names again, to reflect the new kind of work we will be focusing on as the Medical Research Council.

Our mission has always been to build a healthy nation through research. And part of our mission as a Directorate is to do this through community participation and research translation initiatives.

We want to thank our co-writers, designer, photographers, advisors and countless editors. You have made this long process worth it and we have been proud to work with you.

This edition has been dedicated to focusing on stories about health promotion amongst others weight loss, healthy diets as well as lifestyles, environmental health and breast feeding.

You will read a story about what our children eat at schools and what they really should eat. Our Chronic Diseases of Lifestyle experts explain a study that they undertook.

In the story entitled Obesity in Urban Women, you will read some interesting stories of women and one researcher who have made it her life's ambition to help make a difference through her work as a scientist.

We are also happy to introduce our very own MRC President, Professor Anthony MBewu. In a candid interview with MRC News, he spells out his life story and his journey to the top. We wish him and his management team a successful and fruitful time at the helm of the MRC.

All that is left to say – we hope that you as the reader enjoy these stories, these facts and we sincerely hope that it can help make a difference in your life, your lifestyle and your health.

Till next time,

Editorial Team

A young girl with brown hair, wearing a light blue school uniform with a maroon collar, is sitting on a grassy field. She is smiling and looking to her right while holding a sandwich. In front of her is a pink lunchbox containing a white milk carton with a purple cap, a red apple, a green apple, and a banana. The background is a blurred green field under bright sunlight.

What should children eat?

One of a parent's biggest responsibilities is to provide the food a child needs to grow and be healthy. The way a parent does this affects not only the child's health, but also their relationship with food – a cornerstone of their future. **NADIA BOWLEY** and **LUISE MARINO** report.

With today's fast-paced lifestyle, how many of us find time to sit around the dinner table with our families? How many of us eat meals in relays in front of the TV?

Research indicates that the nutritional intake and growth rate of children between the ages of two and twelve can have a profound effect on their susceptibility to obesity and chronic diseases in later years.

This is especially important in such a rapidly developing country as South Africa, where there is both undernutrition – leading to stunted growth – and overnutrition. The latter has become a major cause for concern in South Africa, where there has been an alarming increase in the number of obesity-related diseases in children, including those younger than ten. A shocking example of this is the many children who have been diagnosed with type-2 diabetes, a disease normally associated with overweight adults.

Pre-school children represent a particularly vulnerable sector of our society, as they are unable to make educated food choices and rely on adults for the provision of appropriate foods.

With that in mind, the Paediatric Food-based Dietary Guidelines working group, facilitated and chaired by Dr Lesley Bourne of the MRC Health and Development Research Group, is in the process of producing South African dietary guidelines for children up to seven years of age.

These guidelines, based on scientific evidence and public health concerns in South Africa, are aimed at children from all sectors of society and consist of ten food-based educational messages. Although a draft set of guidelines is available, the actual wording of the guidelines is still being tested on consumers in order to ensure that all South Africans will be able to understand and use them.

In brief, adequate nutrition intake for children aged 1–7 may be reached by providing three meals and two to three small, nutritious snacks. A child's total intake should be based on a wide variety of foods, including mainly cereals and starch-containing foods such as potatoes and rice, plenty of fruit and vegetables, dairy products, meat, chicken, fish and eggs. Sweet treats should be limited and sufficient water intake should also be ensured.

However, when discussing food intake in pre-school children, it is also necessary to address food behaviours that may affect food choices and consumption levels.

Children provided with a variety of healthy foods from an early age consume a nutritionally adequate diet, whereas those with unrestricted access to food tend to have a dietary intake high in fat, sugar and salt and low in micronutrients and dietary fibre.

Research has shown – and many mothers will agree – that children naturally prefer foods that are high in fat and sugar, and that contain fewer vitamins and minerals. Children won't eat food they dislike and usually eat their favourite foods first during the course of a meal.

If a child's hunger is appeased before his or her nutritional intake has been balanced, the overall nutrition of that child's diet may be adversely affected. Offering smaller portions of food at a time will negate this problem – parents can always give the child an additional portion once the first is finished.

It has been established that foods associated with a negative environment can be disliked. Conversely, foods associated with reward (such as desserts) or foods eaten on outings or holidays can

become favoured foods. Conversely, giving normally disliked foods on outings or holidays can have the reverse effect, increasing the child's acceptance of this fare.

Many of us can remember being told that we could have ice cream once we finished our peas. But it is never a good idea to use a favoured food to bribe a child to eat a more unpopular food. This simply serves to reinforce a child's like for the food used to bribe them (the ice cream) and results in them disliking even more the food they are being encouraged to eat.

Once your child is a toddler and is not growing at such a fast rate, they may start to eat a little more erratically. It is perfectly normal for a child aged between one and four to eat two portions at one sitting one day and then relatively little for the next three days. A child may also graze, eating small amounts of food often during the day.

The only concerns arise when the child is only having luxuries as snacks, or is a milk- or juice-aholic, consuming three or four litres of fluid and leaving no room for healthy food.

Unrealistic parental expectations of age-appropriate food intakes can contribute to inappropriate or disruptive meal-time toddler behaviour. The table below gives an idea of realistic portion sizes for toddlers. Please remember that this is a guide – because of the erratic eating patterns that are synonymous with toddlerhood it is unrealistic to expect your child to eat exactly this amount at all, or even most, of their meals.

MEAL	FOOD CHOICE	1 to 3 years	3 to 5 years
Breakfast	Wholegrain bread with egg	½ to 1 slice 1 scrambled or boiled	1 to 2 slices 1 scrambled or boiled
	or		
	Cereal	1 small bowl (15 – 20g) with full cream milk and sugar	1 small bowl (20 – 30g) with 2% milk and sugar
	or		
	Wholegrain bread with cheese or peanut butter	½ to 1 slices	1 to 2 slices
	Yoghurt	1	1
Meal	Meal, fish, chicken	½ to 1 ½ tablespoons minced / chopped	2 to 3 tablespoons
	Potatoes, Rice or Pasta	1 to 2 tablespoon	2 to 3 tablespoons
	Vegetables Dessert / yoghurt / custard	1 to 2 tablespoons 2 to 3 tablespoons	2 to 3 tablespoons 4 tablespoons
Snack	Fruit	1 portion	1 portion
	Sandwich	1 slice of bread	1 to 2 slices
	Nuts and raisins	1 tablespoon (watch to avoid choking)	1 tablespoon
	Block of cheese	20 – 30g grated	30g
	Yoghurt	1	1

Between the ages of 1 and 4, eight out of ten children will display a tendency towards picky eating. To address this situation, parents must first look at themselves. If their expectations are realistic, then a system of positive reinforcement and patience has been shown to be the best way to change their child's behaviour. Force feeding and chastising children never works and only serves to make the situation worse.

Like other areas of development, children progress from total dependence to independence. Independent feeding is not just the ability to get food onto the spoon, move it to the mouth and chew, but also the ability to make sound food choices, and to eat for pleasure, health and satiety.

The feeding relationship between caregiver and child is complex. The infant progresses from being fed when they are hungry – trusting their caregiver to meet their needs – to being able to participate in the process at nine months. By six years of age it is reasonable to expect children to have adopted the basic family attitudes to eating and to participate in appropriate eating behaviours.

Incorporation of cereals and other starch-containing foods such as potatoes and rice, fruit and vegetables, dairy, meat, chicken, fish and eggs is a vital part of ensuring your child's health – not just now, but also for the future.

It may be tempting for tired, multi-tasking parents in a busy modern family to resort to bribing children to eat healthy food or just leaving children to take what they want. In the long run, however, it is vital to make the time to guide young children into healthy eating habits. Providing 1– 7-year-olds with a balanced range of nutritious foods will ensure their healthy growth and development. This will lay the foundation for the healthy adolescent and adult eating patterns essential for avoiding the chronic diseases currently on the increase in the South African population.

CHECKLIST for a healthy diet

- My child eats a variety of foods.
- My child eats five meals/snacks a day.
- Starchy foods form the basis of my child's meal.
- My child eats plenty of fruits and vegetables.
- My child drinks milk every day.
- My child eats chicken, fish, meat, eggs, beans, soya or peanut butter every day.
- My child eats only small amounts of sweets or sugary drinks, and has them during meal times.
- My child regularly drinks clean, safe water.
- My child has regular check-ups at the clinic or paediatrician.
- My child and I engage in active play every day.

Good mealtime habits



Mealtimes should be as quiet and peaceful as possible, as distractions such as television or toys can disrupt the formation of good mealtime habits.

From a young age, children can be allowed to sit on a high chair or later a chair at the table for the duration of the meal. Discourage children from climbing on the table, throwing food or utensils or generally disrupting the proceedings.



Including your child in conversation, even if their language skills are still developing, is important for them to feel part of the proceedings.

If it is not possible for your family and child to eat at the same time, you can start putting your child in a high chair at the table

during meal times from as young as 7 months. This will allow your child to observe what is happening and begin to learn even if he or she is not actually eating.

If your child is eating with you, place the high chair on a plastic sheet or clean towel and protect the child's clothes with a bib. Encourage self-feeding by using some finger foods or giving them a spoon while you assist them with eating. At first most of the food on the spoon will not reach the mouth and will end up on the child, tray or floor. Do not be concerned about 'playing' with food; feeling and getting used to different textures and handling feeding implements is all a vital part of the learning experience. After all, that is what the towel is for!

Recommendations for the fostering of appropriate eating patterns in children

- Provide a wide variety of foods for children to choose from.
- Allow children to control the amount they eat at any given time.
- Help children to adapt to the social timing of meals.
- Stay away from the use of rewards, threats or coercion to get a child to eat.
- Eat meals together as a family unit (when possible).
- For young children, serve meals at an earlier time.
- Control the amount of distraction during a meal.
- Discourage the force feeding of children.
- Only use fast foods, sweets and sugary drinks occasionally as a treat.



Healthy habits *start at school*



While one out of every five South African children is undernourished, nearly as many SA kids are overweight or obese. And the fare available in school tuck shops is very much to blame, reports **ELMIEN WOLVAARDT**.



It's the bad eating habits we learn in childhood that lead to obesity, heart disease, adult-onset diabetes and high blood pressure, say researchers.

No surprise there – which explains why the Department of Education saw fit to include the principles of good nutrition in the new school curriculum. As early as Grade 1, children are now being taught about the differences between healthy and unhealthy foods.

But is this enough?

Research conducted by MRC scientist Dr Nelia Steyn and her collaborators in the USA says no: 'Overall, we found that children know which foods are healthier choices, yet it did not affect their buying behavior,' says Dr Steyn. 'And the foods available to them at school does nothing to improve the situation.'

In short, what children learn in the classroom is difficult, if not impossible, to apply when they go to the tuck shop.

Although one may argue that children prefer unhealthy foods over healthy foods, the evidence says no: a study carried out in a high school cafeteria in the USA showed that, when the prices of fruit, carrots and salads were halved, this resulted in a four-fold increase in sales of fruit, a two-fold increase for carrots, and a slight increase for salads.

Unfortunately, in SA tuck shops, these foods are largely not available.

The research team investigated the eating habits of nearly five

hundred school children, mostly from Grades 7 and 10, attending a total of 14 schools in and around Cape Town. The schools were selected to represent the different levels of socio-economic status in these areas.

The following important results were obtained:

- Only about half of the children studied brought food to school, forcing them to rely on what is available in their tuck shop.
- Nearly 80% of the students in the present study ate at school during the recorded time, with the majority purchasing this food at school.
- Contrary to expectations, a large percentage of the students did not bring healthy items from home. Whether this is due to poor nutrition knowledge or specific preferences of the mothers and students is not known.
- Students attending schools of high socio-economic status were twice as likely to bring food to school and scored higher marks on the quiz of healthy/unhealthy foods, but were no more likely to purchase healthy food.
- Unhealthy foods outnumbered healthy ones by a ratio of two to one. White bread was brought by 25.4% while only 10.5% had brown bread. Whereas candy and potato chips (crisps) were brought by 25.0% and 23.9%, respectively, fruit was brought by 16.8%.



A sad and serious consequence of alcohol use by pregnant women is that it may lead to fetal alcohol syndrome (FAS).

This disorder – the impact of which stays with affected children their whole lives – is solely attributable to the harmful effects of drinking alcohol during pregnancy.

And its consequences are severe: the alcohol a mother consumes during her pregnancy damages the developing brain, resulting in mental retardation. Children with fetal alcohol syndrome struggle to learn and reason. It also causes abnormalities in the nervous system, organs and limbs, and leads to characteristic facial features.

The impact of fetal alcohol syndrome seems to be the highest in the Northern Cape Province. Results from a study in the town of De Aar showed that 122 out of every thousand children starting school were affected – officially the highest frequency yet reported in one population in the world.

In the Western Cape, ongoing research indicates that the number of affected children has nearly doubled between 1997 and 2001: from 46 to 88 out of every thousand children.

In the United States, fewer than one child in a thousand are affected.

The occurrence of fetal alcohol syndrome has not been determined in all South African provinces, although studies in non-wine-growing communities in Gauteng indicated a high prevalence rate among Grade 1 children. This underscores the fact that fetal alcohol syndrome is a significant public health problem in South Africa. If the whole spectrum of disorders that may be caused by even moderate use of alcohol during pregnancy is taken into consideration, it is clear that the problem is even bigger – and

Babies thrive on love, not alcohol – but do all South African mothers know that? And, if they know, is that enough to stop fetal alcohol syndrome? By SANDRA MARAIS

DRINKING

prevention efforts all the more important.

On an individual level, it may seem a simple matter for a woman to prevent fetal alcohol syndrome, by simply not drinking during her pregnancy.

But the use of alcohol during pregnancy is a complex problem, inseparable from many other factors – such as a woman's mental health, her socio-economic status, power relations between her and her partner and the attitudes of her family and community towards drinking.

The good news is that public awareness of fetal alcohol syndrome and the dangers of drinking during pregnancy are now much higher than before, thanks to combined and systematic efforts by many role players, including the South African Medical Research Council, led by the Western Cape Department of Health.

The department, and specifically its Mother, Child and Women's Health sub-directorate, became active in the identification and prevention of fetal alcohol syndrome as early as the 1980s.

Recognising the potential public health threat of the problem, the sub-directorate organised a provincial meeting in early 2001 to set goals and plan a strategy.

A provincial reference and working group was established shortly thereafter, comprising members of the Department of Social Services, the Department of Education, a geneticist (University of Stellenbosch), a neuro-developmental paediatrician (University of Cape Town), FARR (Foundation for Alcohol-Related Research) and Dopstop (with the mission to enable people in rural communities in the Western Cape to take control over alcohol in their lives). The Medical Research Council joined later as a member.

Since 2001, the working group has developed a standardised training manual with the help of experts in the field of fetal alcohol syndrome.

The first two modules of the manual, which explain what fetal alcohol syndrome is and how to identify high-risk groups, is being used as one of the courses taught to clinical nurses in the region.

The third module for the manual – concerning the most effective ways of reaching women at clinics and other primary health care facilities – is soon to be added. It will be based on recent research by the MRC in rural and urban communities.

This research showed that most women in these communities are aware of the dangers of drinking alcohol while pregnant. In fact, one third of the sample also knew what fetal alcohol syndrome was and could identify certain key characteristics of the syndrome correctly.

But this had little or no effect on the levels of alcohol use during pregnancy, the study found.

Clearly, interventions will have to go further than merely raising awareness about the problem and handing out information.

A recommendation was made that primary health care staff at clinics become involved in routine screening of women at risk of alcohol abuse, and that motivational talks aimed to reduce their

alcohol use becomes routine.

Together with screening and motivational talks, an appropriate referral system will have to be put in place. However, interviews with staff members at primary health care facilities showed that, although most staff members were willing to become involved in prevention activities at their facility, they also said their participation wasn't realistic, given their present workload.

This poses a challenge to the health services, but given the current emphasis by the Department of Health on the development of social capital, partnerships can be entered into with appropriate organisations, NGOs and community-based organisations to strengthen services delivered to clients.

Dr Sandra Marais is a senior researcher in the MRC/Unisa's Crime, Violence and Injury Lead Programme. For more information, email sandra.marais@mrc.ac.za.

THE BEST INTERVENTIONS

- **Life skills training:** Programmes designed to teach personal and social skills to help young people resist social influences to use substances. A key target group for this is adolescents, as the age of onset of alcohol use has been found to be a powerful predictor of later alcohol problems. The younger someone begins to drink, the greater the chance that they will develop problems with alcohol later in life. By delaying alcohol abuse, prevention initiatives have the potential to minimise later problems.
- **Routine screening:** There is a consensus among experts to support routine screening of pregnant women for use of alcohol and other substances in various settings.
- **Brief interventions:** There is good evidence that brief interventions in prenatal settings (clinics) are effective low-cost means of helping pregnant women with early stage alcohol problems to reduce or eliminate alcohol use during pregnancy. The technique of brief interventions can be described as a time-limited, patient-centered counselling strategy that focuses on changing patient behaviour and increasing patient compliance with therapy.
- **Intensive case management:** There is strong evidence that intensive case management can be effective in promoting family planning, access to substance abuse treatment, retention in treatment, reduced consumption and connections to community services for high-risk pregnant women.
- **No punitive measures:** There exists no evidence to support the use of punitive measures such as enforced treatment. Experts agree that such measures deter pregnant women from seeking help with alcohol problems during pregnancy.

Reference: Robert G & Nanson J. Best practices: Fetal alcohol syndrome/fetal alcohol effects and the effects of other substance use during pregnancy. Ottawa: Health Canada, 2001.

DURING PREGNANCY

By Prof MICKEY CHOPRA

'Breastfeeding is best'

This is a phrase that every mother should know. It is strongly promoted by health experts, Government and international health agencies – and not without reason.

Research by the World Health Organisation (WHO) found that, in developing countries, an infant that is breastfed – even just a little – is more than twice as likely to survive its first year than one that isn't breastfed at all.

This is because breastfeeding is an extension of maternal protection. It supports the young infant during its introduction to the outside world with its many diseases. And this protection is especially important in developing countries, where infectious diseases are more common.

Recently, research has also shown that the benefits of breastfeeding increase the more it is practised, and exclusive breastfeeding – where an infant receives nothing but breastmilk – has been proved to give the best protection against infection.

A study of infants living in the overcrowded and poverty-stricken slums of Dhaka in Bangladesh found that the risk of death in the first six months was more than halved when infants were exclusively breastfed.

Even in settings where diarrhoea and pneumonia are less common, breastfeeding has been found to hold significant benefits for the infant in terms of better cognitive and intellectual performance, as well as reduced allergies and ear infections. It is also important for the health of the mother – breastfeeding assists with birth spacing and reduces the risk of breast cancer.

But the landscape changed in 1985: HIV was discovered in breastmilk and it was found that the virus can be transmitted to a baby via breastfeeding. Further research has shown that, on average, about 7% of babies born to HIV-infected mothers will become infected if they are given a mixture of breastfeeding and other



Breast is best

but what about HIV?

liquids and foods for 12 months.

In first-world countries, the way forward was clear – women were advised to give their babies formula only. But what about mothers in developing countries, where depriving infants of breastmilk significantly increases the risk of serious illness and death?

In August 1999, South African researchers based in Durban published ground-breaking research on HIV-positive women. They found that those mothers who exclusively breastfed their infants for the first three months had much lower rates of transmission of HIV than those who mixed breastfeeding with other liquids, formula feeds or semi-solids.

This study underscores what has long been known: that exclusive breastfeeding protects against a number of infections in early infancy – including HIV.

Even so, it might seem safer to advise a mother with HIV not to breastfeed at all, but rather to use formula or replacement milk and bottle feed her infant exclusively – thereby avoiding contact with the virus. However, in order for bottle feeding to be a safe alternative to breastfeeding, and not put the infant at even greater risk of illness and death, the following criteria must all be met for the entire period that bottle feeding will take place:

- Replacement milk must be accessible and affordable, and it must be possible to prepare it safely with clean water and utensils
- Adequate health care must be available and affordable
- The community and household must be accepting of the fact that a woman doesn't breastfeed her child.

If these conditions can't be met, exclusive breastfeeding provides the best alternative.

Of concern is the fact that, although exclusive breastfeeding is deemed the ideal practice for infants up to about six months of age,

even in the general population this behaviour is practiced rarely, with only 10% of infants in South Africa being exclusively breastfed at three months of age.

Women who choose to exclusively breastfeed – especially those who are HIV-positive – require constant and vigorous support and protection.

Without it, HIV-positive women may find it necessary to mix their feeding methods, which will increase their infants' risk of infection with HIV.

The South African situation

Advising HIV-positive mothers about the safest infant feeding options forms part of the Department of Health's prevention of mother-to-child transmission (PMTCT) programme.

The programme provides free breastmilk replacement formula, and offers counselling to help HIV-positive mothers choose the feeding method that is best for their particular situation.




The MRC's Health Systems Research Unit (in collaboration with the Health Systems Trust and the University of the Western Cape) has been working closely with the department to examine the practical challenges of the programme. Results from these studies suggest the following:

- The complex nature of the decision an HIV positive mother has to make about infant feeding means that good counselling support is vital.
- There are still gaps in the knowledge of health workers, many of whom are not comfortable counselling women experiencing infant feeding difficulties.
- Health workers need ongoing supervision and support after receiving training in order to enhance their application of recently learnt skills and knowledge.
- There have been numerous operational problems with the provision of free formula milk as part of the PMTCT programme in South Africa. These problems include erratic supplies, poor training of mothers in safe formula preparation and inadequate storage facilities in many clinics. Furthermore, there is evidence that the provision of free formula milk does not guarantee exclusive formula feeding.
- There is evidence of high rates of mixed feeding in the general population, and given the inadequate infant feeding support provided, this is likely to be the same for HIV positive women. Given the current knowledge on exclusive breastfeeding, this would increase the risk of HIV transmission through breastmilk.
- Infant feeding is considered to be the most challenging component of PMTCT for policy makers, health workers and mothers.

A study has just been completed that followed up over seven hundred HIV-positive mothers who had been through the PMTCT programme in three provinces. The full results will be released shortly. The research team is now evaluating the effectiveness of a community-based infant feeding intervention to improve the rates of exclusive breastfeeding and exclusive replacement feeding for HIV-positive mothers who choose not to breastfeed.

Prof Mickey Chopra (mickey.chopra@mrc.ac.za) is Research Director of the MRC's Health Systems Research Unit.

Choosing a feeding method

	Protection of the general health of baby	Protection offered against HIV infection
Exclusive breastfeeding 	BEST	MODERATE
Mixed feeding 	MODERATE	LOW
Formula (bottle) feeding 	LOW (in conditions of poverty)	BETTER

Breastfeeding awareness

1. Breastmilk *alone* is the only food and drink an infant needs for the first six months. No other food or drink, not even water, is usually needed during this period.
2. There is a risk that a woman infected with HIV can pass the disease on to her infant through breastfeeding. Women who are infected or suspect that they may be infected should consult a trained health worker for testing, counselling and advice on how to reduce the risk of infecting the child.
3. Newborn babies should be kept close to their mothers and begin breastfeeding within one hour of birth.
4. Frequent breastfeeding causes more milk to be produced. Almost every mother can breastfeed successfully.
5. Breastfeeding helps protect babies and young children against dangerous illnesses. It also creates a special bond between mother and child.
6. Bottle feeding can lead to illness and death. If a woman cannot breastfeed her infant, the baby should be fed breastmilk or a breastmilk substitute from an ordinary clean cup.
7. From the age of six months, babies need a variety of additional foods, but breastfeeding should continue through the child's second year and beyond.
8. A woman employed away from her home can continue to breastfeed her child if she breastfeeds as often as possible when she is with her infant.
9. Exclusive breastfeeding can give a woman more than 98% protection against pregnancy for six months after giving birth – but only if her menstrual periods have not resumed, if her baby breastfeeds frequently day and night, and if the baby is not given any other food or drinks, or a pacifier or dummy.

Source: UNICEF, 2002 (www.unicef.org)

STRIPPED

THE STORY OF LEAD IN PAINT IN SOUTH AFRICA



Puzzled by the lead poisoning of a single child, MRC researchers didn't stop until they discovered its source: the lead used in paint. And the legislation they have since lobbied for could help millions of children.

By **ANGELA MATHEE** and **BRENDON BARNES**

Some of the most important health hazards of our time were identified from just a single case.

In 1978, Kenneth Feldman, a paediatrician in the United States, treated a 32-month-old child for scald burns. The child sustained the injury when she was put into a hot bath feet first.

Feldman identified 57 such cases from hospital records, visited each child's home and measured the water temperature at the tap. He found that the water temperature set by manufacturers was 65°C, which was far too hot for children's sensitive skin.

Not satisfied with accepting this as an interesting scientific finding, Feldman successfully campaigned for legislation to reduce the hot water temperature to 49°C and thereby significantly reduced the number of US children hospitalised for scalding.

Nearly three decades later, a single case was also the key in a

discovery by MRC scientists that South African children are being exposed to unacceptably high levels of lead.

Lead is a widely used, but toxic, heavy metal that can cause a number of child health problems. At relatively low exposures, statistically significant associations have been shown between children's blood lead concentrations and conditions such as mild intellectual impairment, hyperactivity, shortened concentration spans and the emergence of violent or aggressive behaviour.

At high levels, lead exposure has been associated with damage to virtually all organ systems, including the brain, heart, kidneys, liver and circulatory system.

The current internationally accepted 'action level' for lead is ten micrograms of lead per decilitre of blood. It is called an action level because as soon as the concentration of lead in a child's body reaches or exceeds this level, the child needs to receive medical attention.

This recommendation is far from over-cautious: negative health effects have been shown in children with blood lead levels as low as a third of that.

After a country-wide study of children's blood lead levels in 2002, MRC scientists from the Health and Development Research Group discovered a seven-year-old girl whose blood lead level was 44 micrograms per decilitre, compared to the average of 9,1 in the rest of the children they tested.

One month later, when the scientists conducted follow-up tests

to verify their finding, they discovered that the child's blood lead levels had increased to 52 – over five times the international action level. The child was immediately referred to a paediatric hospital for treatment, leaving the MRC team with the task of finding the source of the child's lead poisoning.

Interviews with the child's parents revealed that she had a bad pica habit (the tendency to eat non-food items, including soil) and was frequently eating paint off the walls of her home, despite valiant attempts by her parents to stop her from doing so. Tests on paint samples taken from her home revealed lead concentrations that were nine times higher than the internationally accepted action level.

Although researchers have known since the early 1980s that South African children were exposed to high levels of lead, the source was mainly attributed to the lead added to petrol. This seemed to be confirmed when, after the introduction of unleaded petrol in 1996, MRC studies began to show associated reductions in child blood lead levels.

However, the 2002 study showed that lead was still very much present in the blood of South African children – and paint started to emerge as an important suspect in the search for its source.

Inspired by these findings, the MRC team collected paint and dust samples from the homes of the twenty children with the highest blood lead levels identified in the 2002 survey. The results showed that over one third of the paint samples and 79% of the dust samples had lead levels above the international standards.

These findings were worrying indeed, and the group of scientists next decided to examine the levels of lead in residential paint in houses across Johannesburg. Of the 239 homes they tested, 20% were found to have unacceptably high lead levels in their paint. Considering that the South African Paint Manufacturers' Association had entered into a voluntary agreement to limit the use of lead in paint in the mid-1970s, it came as a surprise that homes built after this time had paint with high lead levels.

These findings, in turn, led the MRC team to test both popular and lesser-known brands of enamel paint currently being sold to the general public from paint stores in Cape Town and Johannesburg. The results showed that 83% of the pigmented enamel paint samples were lead-based, with lead concentrations ranging up to 38 times the international reference standard. Only one out of the eleven brands of lead-based paint they tested carried a warning label. Lead-based paint, it seemed, was still being widely sold – to mostly unsuspecting customers in South Africa.

Of particular interest to the team was where and how this paint might end up near young children.

A 2005 screening study of lead in certain children's painted toys found that some of them contained as much as 135 903 micrograms of lead per gram of paint. This was an astounding 1 500 times higher than the recommended safety level of 90 micrograms.

Painted toys with a high lead content included children's



building blocks and puzzles – toys that are commonly used in homes, schools and pre-school institutions.

These alarming findings were conveyed to MRC President Prof Anthony MBewu who, in turn, presented a technical report to the Minister of Health. The Ministry immediately took steps towards legislative action to regulate the use of lead in paint, thereby replacing the current voluntary agreement.

This series of investigations and actions was inspired by one observation of a young girl who had extremely elevated blood lead levels. The team could have merely recorded her test results, elevated though they were, and been satisfied with an interesting study.

However, like Feldman and many others, driven by scientific curiosity and the passion for knowledge that can make a difference, the team pursued a series of questions that led them ever closer to the truth.

Their painstaking work led not only to the discovery of paint as a major source of lead poisoning in South Africa, but also to the initiation of legislative processes and the first nationwide awareness campaign to inform the South African public about this major environmental health problem.

Dr Mathee (angie.mathee@mrc.ac.za) is the Director of the MRC Health and Development Research Group, where Mr Barnes (brendon.barnes@mrc.ac.za) is a senior scientist.

A hands-on response

After discovering the young girl with elevated blood lead levels and high concentrations of lead in the paint in her home, MRC researchers believed that the situation was life threatening enough to warrant immediate intervention. In consultation with the Ethics Review Committee from which ethical approval for the study had been obtained, the team made arrangements to inform the child's parents of her condition.

The child was immediately admitted to the local children's hospital where she obtained treatment for her condition, including counselling for her pica tendencies. The MRC also supported the replacement of the old paint in her home with lead-free paint.

Given the toxic nature of the existing paint, the refurbishment involved temporarily relocating the family while the paint was stripped, removed and safely disposed of by environmental professionals.

It is too soon to know whether these interventions have had an impact on the child. However, the study team is closely monitoring her condition.



MRC-funded researchers at North-West University (Potchefstroom campus) have embarked on a transdisciplinary in-depth investigation into the cardiovascular, psychological and metabolic consequences of obesity.

The study was the result of the increase in over-nutrition and obesity levels in South Africa, especially in women, which led them to look at the recently discovered hormone, ghrelin. This hormone is mainly produced by cells lining the stomach, and is thought to increase feelings of hunger.

The study took place in the North West Province and had two phases: the first phase, conducted in 2003, which included the participation of 102 apparently healthy African women. The second phase, conducted in 2004, included 115 apparently healthy Caucasian women.

The women in both phases were classified as lean, overweight and or obese.

"In people with anorexia nervosa very high levels of ghrelin have been reported because they're not getting enough food, so the body produces

more ghrelin to make them hungry," said Dr Alta Schutte of the Profiles of the Obese Women with Insulin Resistance Syndrome (POWIRS) study.

"High levels of ghrelin in the blood circulation increase appetite, whereas low levels will decrease appetite. It is therefore supposed to maintain a normal body weight in normal individuals," she said.

According to the study, ghrelin had been speculated to rank along with two other major hormones in maintaining a normal energy balance in the body. For this reason the study was aimed at examining the relationship between the levels of leptin (a hormone produced by fat cells that indicates the degree of hunger to the brain), ghrelin and insulin in the development of obesity and the metabolic syndrome (a collection of health risks and conditions that increase the chance of developing heart disease, stroke, and diabetes) in women. It was also aimed at examining the differences in the mechanisms of development of obesity and the metabolic syndrome between Caucasian and African women.

"The metabolic syndrome is associated with a pre-diabetic condition, which is in many cases an indication of the development of type two diabetes. Pre-diabetes is also associated with insulin resistance, a condition that results when the insulin receptors on the cells become resistant or less sensitive to the effects of insulin," said Dr Schutte.

"Although not in all cases, a high percentage of those with insulin resistance are obese. Obesity is also associated with high levels of leptin in the blood, which is a form of leptin resistance. In normal conditions high levels of leptin would result in an individual eating less and losing weight, but in obese subjects the opposite is found, leading to the understanding that the leptin receptors of obese individuals have become resistant to the effects of leptin." Dr Schutte said.

Contrary to ghrelin, obestatin, another hormone that has recently been discovered by Stanford University researchers, is believed to suppress appetite. The same genes that produce ghrelin produce this hormone. Although the POWIRS study was

Obesity is on the increase among South African women of all races. What are the health implications? SAKHELE VANDA and CAROLE ROBERTS reports.

Bigger, *but not better*

conducted before obestatin was discovered, Dr Schutte finds the possibilities of obestatin interesting in as much as it makes researchers aware of other players involved in maintaining body weight.

She warns people not to jump to conclusions about all the future possibilities of obestatin, as they should not forget that obestatin may also have many other roles, possibly regulating other metabolic or cardiovascular functions.

"It is only recently that many new functions of leptin, which was discovered in 1994, were identified," Dr Schutte said.

Dr Salome Kruger, also a member of POWIRS, added that they read about ghrelin in the scientific literature and wanted to study the difference in ghrelin concentrations in obese and non-obese women. She told *MRC News* that they also wanted to study the association between ghrelin, leptin, insulin and adiponectin (a hormone produced by fat cells that promotes sensitivity to insulin) in these women. The study compared various cardiovascular, psychological, social and hormonal aspects of lean, overweight and obese women.

"In most of our recent publications we have focused on these hormones separately. This also applies to cardiovascular, psychological and hormonal aspects where we have focused on them as separate areas. I'm currently busy with a paper aiming to explore associations between these areas and these different hormones," said Dr Schutte.

The study found that obese women had significantly lower ghrelin levels compared to the lean women.

According to the study, both the African and Caucasian obese groups showed a typical volume-loading effect regarding blood pressure which is characterised by increased cardiac effects (higher stroke volumes), and lower peripheral resistance (one of the main components that determines blood pressure, which is the resistance in the blood vessels).

"When the cardiovascular parameters of the African and Caucasian obese groups with similar ages were compared, clear differences were observed: the African women had significantly higher diastolic blood pressure explained by a significantly lower stroke volume and higher peripheral vascular resistance.

"Significant associations between leptin and recurrent expansion blood pressure (and vascular resistance) were obtained only within the obese Caucasian women. This might indicate a blood pressure lowering effect of leptin in the Caucasian women. It is important to note that this significant association was not shown for the African women," said Dr Schutte.

The study indicates that poverty also played a role in the development of obesity, as it was revealed that the obese African women had the worst exposures to the poorest living conditions, smallest income, lowest level of education, least sense of spiritual well-being and highest self-reported alcohol intake when compared to the lean and overweight African women. (see "Obesity in urban women: Is too much food intake the only causing factor?" on page 18-19)

"There seems to be a combination of under-nutrition in early childhood and overnutrition in later life, which lead to high levels of obesity. Both under-nutrition and over-nutrition could

WHAT IS THE METABOLIC SYNDROME?

The metabolic syndrome, also called the insulin resistance syndrome, is characterised by a group of metabolic risk factors in one person. They include:

- Abdominal obesity (excessive fat tissue in and around the abdomen)
- Atherogenic dyslipidemia (blood fat disorders — high triglycerides, low HDL cholesterol and high LDL cholesterol — that foster plaque build-ups in artery walls)
- Elevated blood pressure
- Insulin resistance or glucose intolerance (the body can't properly use insulin or blood sugar)
- Prothrombotic state (e.g. high fibrinogen or plasminogen activator inhibitor-1 in the blood)
- Proinflammatory state (e.g., elevated C-reactive protein in the blood)

People with the metabolic syndrome are at increased risk of coronary heart disease and other diseases related to plaque build-ups in artery walls (e.g. stroke and peripheral vascular disease) and type-2 diabetes. The metabolic syndrome has become increasingly common in the United States. It's estimated that over 50 million Americans have it. The dominant underlying risk factors for this syndrome appear to be abdominal obesity and insulin resistance. Insulin resistance is a generalised metabolic disorder in which the body can't use insulin efficiently. This is why the metabolic syndrome is also called the insulin resistance syndrome.

Other conditions associated with the syndrome include physical inactivity, ageing, hormonal imbalance and genetic predisposition.

Some people are genetically predisposed to insulin resistance. Acquired factors, such as excess body fat and physical inactivity, can elicit insulin resistance and the metabolic syndrome in these people. Most people with insulin resistance have abdominal obesity. The biological mechanisms at the molecular level between insulin resistance and metabolic risk factors aren't fully understood and appear to be complex.

[Source: *The American Heart Association*, <http://www.americanheart.org>]



be linked to poverty, and the results of the study indicated that those women with higher levels of education showed lower levels of obesity. This might indicate the importance of education in preventing the epidemic," said Dr Schutte.

The study, she said, concluded that the obese group showed the most vulnerable health profile compared to the lean and overweight groups. Ironically, the obese group showed a significantly higher level of satisfaction with life compared to their lean and overweight controls.

Dr Schutte told the *MRC News* that a nutrition expert and a PhD student are currently using the results from the food frequency and physical activity questionnaires to develop a programme for obese women to help them control weight.

On the basis of the current knowledge on obestatin, Dr Schutte says the hormone can lead to obesity treatment. She also stresses that much needs to be learned about the hormone before people can be sure that it's a safe option.

"Similar hopeful suggestions were made about ghrelin inhibition, which causes hunger and it did not result in very effective obesity treatment strategies," she said.

POWIRS has not planned a study focusing on obestatin, but according to Dr Schutte, they would be interested in doing these analyses on the lean and obese women who took part on the POWIRS study, since they have the serum samples available and the women gave their consent to perform analyses on appetite and weight-related hormones.

How is the metabolic syndrome diagnosed?

There are no well-accepted criteria for diagnosing the metabolic syndrome. The criteria proposed by the National Cholesterol Education Program (NCEP) Adult Treatment Panel III (ATP III), with minor modifications, are currently recommended and widely used. The International Diabetes Federation has recently published an "IDF Worldwide definition of the metabolic syndrome" which takes various factors into account. It is very similar to the ATP III criteria, but more comprehensive. It can be downloaded from: <http://www.idf.org/home/>

The American Heart Association and the National Heart, Lung, and Blood Institute recommend that the metabolic syndrome be identified as the presence of three or more of these components:

- Elevated waist circumference: Men: Equal to or greater than 40 inches (102cm), Women: Equal to or greater than 35 inches (88cm)
- Elevated triglycerides: Equal to or greater than 150 mg/dL (1.69mmol/L)
- Reduced HDL ("good") cholesterol: Men: Less than 40mg/dL (1.04mmol/L), Women: Less than 50mg/dL (1.29mmol/L)
- Elevated blood pressure: Equal to or greater than 130/85mm Hg
- Elevated fasting glucose: Equal to or greater than 100mg/dL (5.5mmol/L)

Recommendation for managing the metabolic syndrome

The primary goal of clinical management of the metabolic syndrome is to reduce the risk for cardiovascular disease and type-2 diabetes. Then, the first-line therapy is to reduce the major risk factors for cardiovascular disease: increase physical activity and lower levels of obesity, stop smoking and reduce LDL cholesterol, blood pressure and glucose levels to the recommended levels.

For managing both long- and short-term risk, lifestyle therapies are the first-line interventions to reduce the metabolic risk factors. These include

- Weight loss to achieve a desirable weight (BMI less than 25kg/m²)
- Increased physical activity (at least 30 minutes of moderate-intensity activity on most days of the week)
- Healthy eating habits that include reduced intake of saturated fat, trans fat and cholesterol.

WHAT IS BLOOD PRESSURE?

High blood pressure (hypertension) is termed the “silent killer” as there are rarely any visible symptoms. More advanced cases however may cause headaches, especially pulsating headaches behind the eyes; visual disturbances; nausea and vomiting; sleepiness and even seizures in severe cases. Two out of three people with high blood pressure are unaware of the condition.

It is estimated that one in four South Africans between the ages of 15 and 64 years suffer from high blood pressure. It is one of the leading causes of heart attack, stroke, kidney failure and premature death.

What is blood pressure? Your blood pressure is the force exerted by your heart, against the resistance created by the arteries, to keep blood flowing through your body. Your blood pressure is high (hypertension) when the force is excessive. A blood pressure measurement is made up of two parts: systolic and diastolic. Systolic pressure occurs in arteries during heart contraction, and diastolic pressure during the period of heart relaxation between beats. This is why a measurement is expressed as one figure ‘over’ another, for example, 140/90mm Hg.

Researchers now believe that blood pressure as high as 130/85 mm Hg can be considered normal, with 140/90mm Hg as the highest border for normality.

At what level is blood pressure high? The following is a guide to acceptable blood pressure levels:

- Normal: < 130/85
- High normal: 130/85 to 140/90
- Hypertension:
 - mild: 140/90 to 160/100
 - moderate: 160/100 to 180/110
 - severe : 180/110 to 210/110
- Very high: > 210

The only way to know if your blood pressure is high is to have it checked regularly.

[Source: Heart Foundation South Africa, <http://www.heartfoundation.co.za/>]

WHAT IS DIABETES?

Diabetes is a chronic condition that occurs when the pancreas do not produce enough insulin or when the body cannot effectively use the insulin it produces. Hyperglycaemia and other related disturbances in the body’s metabolism can lead to serious damage to many of the body’s systems, especially the nerves and blood vessels.

There are two basic forms of diabetes. Type-1: people with this type of diabetes produce very little or no insulin. Type-2: people with this type of diabetes cannot use insulin effectively. Most people with diabetes have type-2.

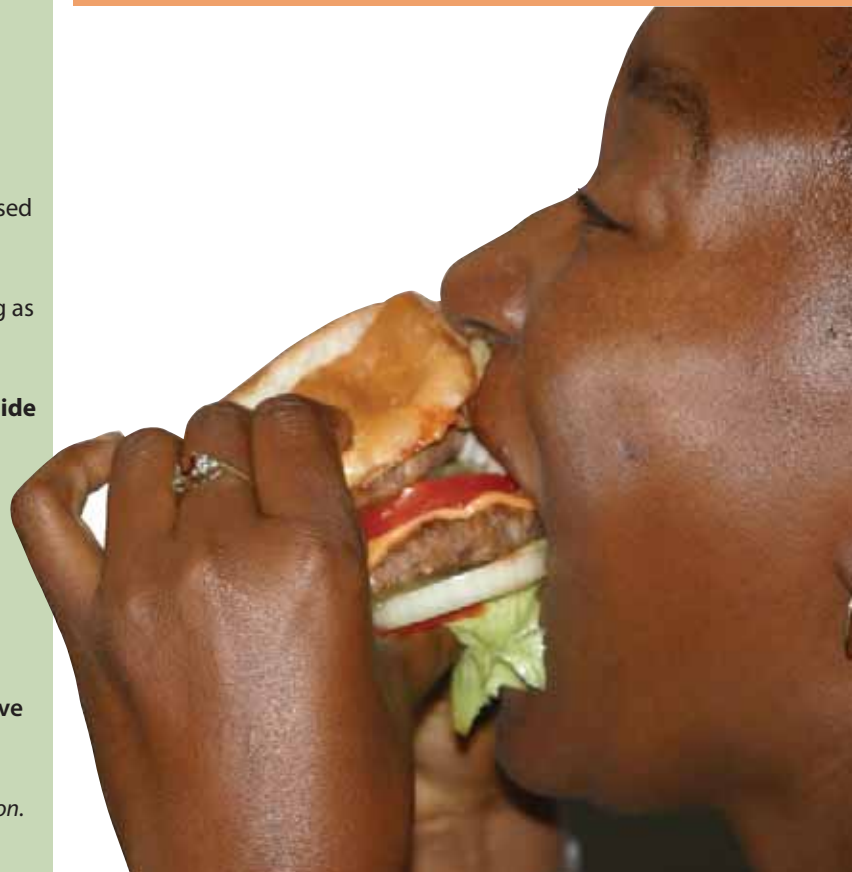
A third type of diabetes, gestational diabetes mellitus (GDM), develops during some cases of pregnancy but usually disappears after pregnancy.

People with type-1 diabetes require daily injections of insulin to survive. People with type-2 diabetes can sometimes manage their condition with lifestyle measures alone, but oral drugs are often required, and less frequently insulin, in order to achieve good metabolic control.

Common symptoms of type-1 diabetes include: excessive thirst; constant hunger; excessive urination; weight loss for no reason; rapid, hard breathing; vision changes; drowsiness or exhaustion. These symptoms may occur suddenly.

People with type-2 diabetes may have similar, but less obvious, symptoms. Many have no symptoms and are only diagnosed many years after onset. As a consequence, almost half of all people with type-2 diabetes are not aware that they have this life-threatening condition.

[Source: World Health Organisation, <http://www.who.int/diabetes/facts/en/>]



Research into the health behaviour of urban South African women and their daughters, conducted by Zandile Mciza of the MRC/UCT Exercise Science and Sports Medicine Research Unit, has proved that social environment contribute to women's obesity.

Zandile's study established that factors such as socio-economic status, culture, environment and family, in addition to biological factors, do play a big role in the development of obesity in women.

The study included 333 primary schoolgirls aged 9–12 years and their mothers from the Cape Town area. Research subjects were interviewed to get information about their demographics, cultural identity and body image. Also, their weight, height and skin-fold thickness were measured.

The aim of Zandile's research was to validate questionnaires concerning body image perception, body size dissatisfaction, weight-related beliefs and attitudes of multi-ethnic South African mothers and their daughters. She is the first South African to validate such questionnaires.

Questionnaire validation is a process of finding reliability in questionnaires. 'You do this to make sure that the items/questions in the questionnaire are giving you the information that you want or intend to get. To prove that my instruments were valid, I had to compare them against a golden standard or another tool,' Zandile explains. They also had to be user-friendly, age-appropriate and culturally sensitive.

The results highlighted that all urban women from different ethnic groups are not happy with their body sizes, whereas black pre-adolescent girls are found to have less body size dissatisfaction when compared to their white counterparts.

'When participants were asked to choose their ideal body type from the sketches provided, black mothers and their daughters

This is me, take it or leave it!

were similar in that they preferred bigger body sizes when compared to white mothers and their daughters, who preferred thinner bodies,' Zandile said, adding that the study confirmed that black women saw bigger bodies as attractive. Also, women with bigger bodies are considered as HIV/AIDS-free in black communities, she added.

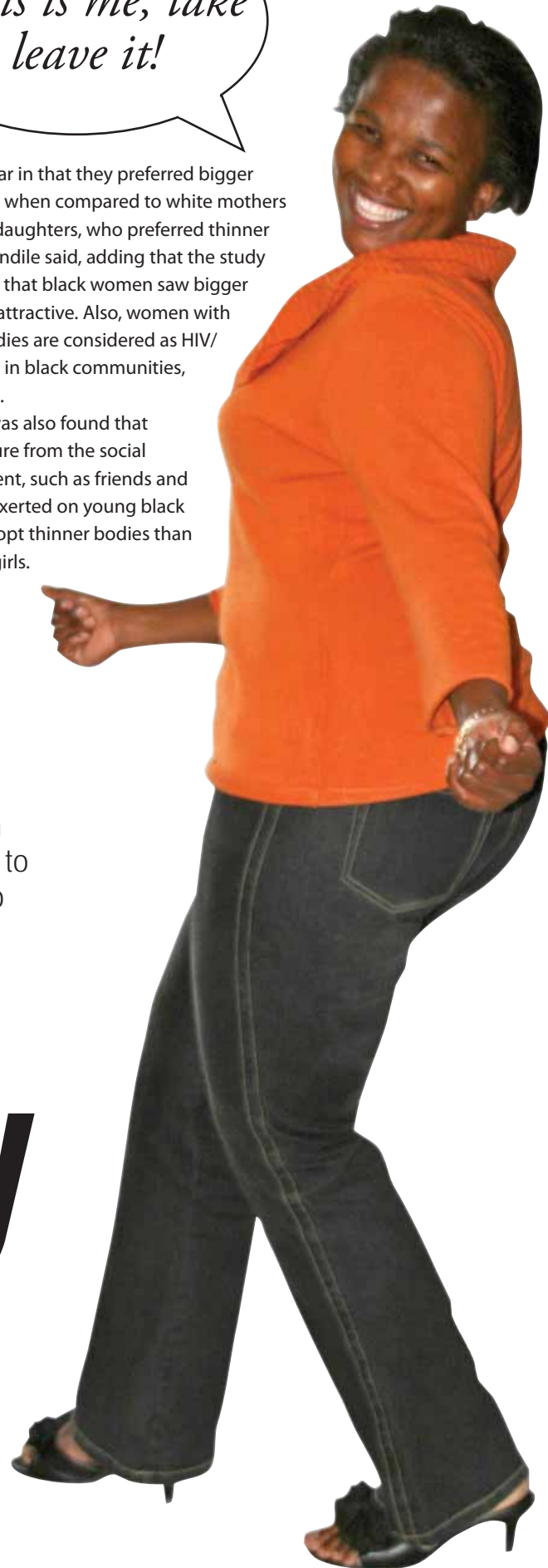
It was also found that less pressure from the social environment, such as friends and family, is exerted on young black girls to adopt thinner bodies than on white girls.

With studies showing that 62% of black urban South African women are overweight and obese, compared to 53% of urban white women – a lot has to be done to overcome this issue, writes MZINGISI MGWALI.

Obesity

in urban women

Is too much food intake the only causing factor?



Zandile's study

Zandile, now a full-time PhD student in the Nutrition and Dietetics Unit at the University of Cape Town (UCT), was born in Durban but she later moved to King William's Town in the Eastern Cape. She says growing up in an environment where black people's participation in health services was very low is what motivated her to go into science.

'I went into science in an effort to learn more about health problems, such as the chronic diseases of lifestyles (diabetes mellitus, hypertension and heart disease) which my community was facing and to also try to find solutions,' Zandile says.

After finishing her tertiary studies doing a dietician course at the University of the Western Cape (UWC), she joined the Sports Science Institute of South Africa based at UCT. While there, Zandile was introduced to the obesity topic and its link to the chronic diseases of lifestyle. She saw this as an opportunity to fulfill her goal. 'The experience I had working in hospital and community settings and the literature I reviewed taught me that the best way to reach my goal of trying to uncover health troubles facing my community was to properly understand the causes of obesity,' says Zandile.

Zandile obtained a sponsorship from the MRC, UCT and the Nestlé foundation to kick-start her research career. But she soon learnt that there was a lack of information in South Africa regarding obesity and a need for culturally sensitive and age-appropriate instruments to explore those issues. She started her research by adapting all the available tools and later modified them to suit the cultural diversity of SA women. She also designed new instruments.

Late last year, Zandile won the prestigious 2005 Women in Science Fellowship award in the category of Gender Responsive Research.

The fellowship came with R100 000 prize money, which can only be used for research support such as international traveling and study expenses. She plans to conduct a nationwide study on obesity as soon as she's completed her PhD.

Zandile advises women who think they might be overweight and obese to seek help from a professional who is well informed about this subject, such as a dietician, in order to avoid using incorrect information.

'Obesity is a killer disease, as identified by the World Health Organisation. It might not affect you there and then, but may increase the risk of developing chronic diseases of lifestyle later in life,' she concluded.

For more information, contact Zandile Mciza at (021) 650-4566, or zmciza@sports.uct.ac.za




What's up with these wide-angle mirrors?



The best evidence says

The information on these pages are plain language summaries of Cochrane systematic reviews produced by the international Cochrane Collaboration. In order to write such a review, authors evaluate and integrate all the available evidence about a particular health intervention or treatment and make recommendations about its benefits and safety.

Hormone replacement therapy involves some risk



Hormone therapy (also known as hormone replacement therapy) is widely used for controlling menopausal symptoms. It has also been used for the management and prevention of chronic diseases such as cardiovascular disease, osteoporosis and dementia in older women.

This Cochrane systematic review assessed the long-term clinical effects of using hormone therapy by reviewing fifteen randomised double-blind trials involving around thirty-five thousand women altogether. Some of the trials looked at the effects of hormone therapy with oestrogens alone, while others studied the effects of combined hormone therapy (which is made up of oestrogens and progestogens).

In healthy women, combined hormone therapy, administered on a continuous basis, significantly increased the risk of obstruction of a vein by a blood clot

(venous thromboembolism). It also significantly increased the risk of fatal or non-fatal heart attack (after a year's use), stroke (after three years' use), breast cancer (after five years' use), gallbladder disease, and – in women over 65 years – dementia. Long-term oestrogen alone also significantly increased the risk of stroke and gallbladder disease.


Among women with cardiovascular disease, long-term use of combined hormone therapy significantly increased the risk of venous thromboembolism and gallbladder disease.

On the whole, the benefit offered by hormone therapy was a significant reduction in the risk of fracture or colorectal cancer, but only after four or five years of treatment.

The highest risk of cardiovascular events with combined hormone therapy occurred in the first year of use.

Farquhar CM, Marjoribanks J, Lethaby A, Lamberts Q, Suckling JA, the Cochrane HT Study Group. Long-term hormone therapy for perimenopausal and postmenopausal women. *The Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD004143. DOI: 10.1002/14651858.CD004143.pub2.

Vitamin C and the common cold



Vitamin C in doses as high as 2 000mg daily is not a remedy for either the prevention or treatment of the common cold.

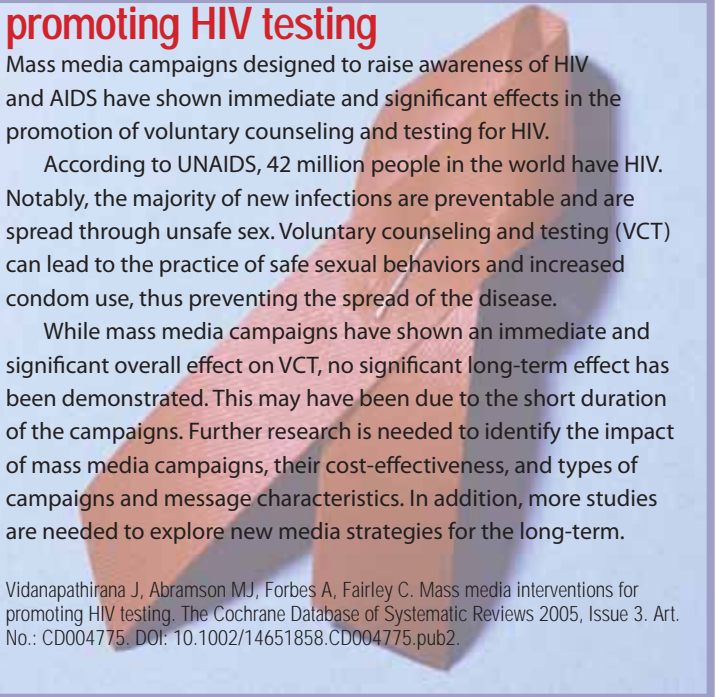
Evidence from trials of vitamin C tablets in the prevention and treatment of the common cold shows that regular supplementation does not lower the probability of getting a cold – except in people exposed to short periods of extreme physical and/or cold stress (including marathon runners and skiers).

Regular supplementation is fairly consistently associated with a minor reduction in the duration, and sometimes the severity, of cold symptoms. However, this is of doubtful clinical usefulness.

When high doses of vitamin C are taken at the onset of cold symptoms in an effort to treat colds, they have not been shown to reduce either the duration or severity of symptoms.

Hemila H, Chalker E, D'Souza RRD, Douglas RM, Treacy B. Vitamin C for preventing and treating the common cold. *The Cochrane Database of Systematic Reviews* 2004, Issue 4. Art. No.: CD000980. DOI: 10.1002/14651858.CD000980.pub2.

Mass media interventions for promoting HIV testing



Mass media campaigns designed to raise awareness of HIV and AIDS have shown immediate and significant effects in the promotion of voluntary counseling and testing for HIV.

According to UNAIDS, 42 million people in the world have HIV. Notably, the majority of new infections are preventable and are spread through unsafe sex. Voluntary counseling and testing (VCT) can lead to the practice of safe sexual behaviors and increased condom use, thus preventing the spread of the disease.

While mass media campaigns have shown an immediate and significant overall effect on VCT, no significant long-term effect has been demonstrated. This may have been due to the short duration of the campaigns. Further research is needed to identify the impact of mass media campaigns, their cost-effectiveness, and types of campaigns and message characteristics. In addition, more studies are needed to explore new media strategies for the long-term.

Vidanapathirana J, Abramson MJ, Forbes A, Fairley C. Mass media interventions for promoting HIV testing. *The Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD004775. DOI: 10.1002/14651858.CD004775.pub2.



Exercise therapy for treatment of non-specific low back pain

Exercise therapy appears to be slightly effective at decreasing pain and improving function in adults with chronic low-back pain, particularly in populations visiting a healthcare provider.

In adults with subacute low-back pain, there is some evidence that a graded activity program reduces absenteeism, although evidence for other types of exercise is unclear. For patients with acute low-back pain, exercise therapy is as effective as either no treatment or other conservative treatments.



Hayden JA, Tulder MW van, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low-back pain. *The Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD000335. DOI: 10.1002/14651858.CD000335.pub2.

Continuous support for women during childbirth

Continuous labour support – involving emotional support, information and comfort measures – may enhance the normal labour processes and thus reduce the need for obstetric intervention.

Women who received continuous labour support were found to be less likely to use pain medications and were more likely to be satisfied and to give birth 'spontaneously' (with neither caesarean, nor vacuum, nor forceps being necessary).

In general labour, support was more effective when it was provided by women who were not part of the hospital staff.

Hodnett ED, Gates S, Hofmeyr G J, Sakala C. Continuous support for women during childbirth. *The Cochrane Database of Systematic Reviews* 2003, Issue 3. Art. No.: CD003766. DOI: 10.1002/14651858.CD003766.



Lifestyle choices for the prediabetic

Persons with blood glucose levels that are abnormal, but not yet in the range of persons with diabetes, are said to have prediabetes – which often precedes the development of type-2 diabetes.

Most persons with prediabetes are overweight, and obesity worsens the blood glucose and other problems associated with prediabetes.

In this review we found that interventions involving diet, physical activity or behaviour produced significant improvements in weight among persons with prediabetes, as well as a significant decrease in diabetes incidence.

Modest, but not statistically significant, improvements were noted in the few studies that examined blood sugar control, blood pressure, and lipid levels.

Norris SL, Zhang X, Avenell A, Gregg E, Brown TJ, Schmid CH, Lau J. Long-term non-pharmacologic weight loss interventions for adults with type 2 diabetes. *The Cochrane Database of Systematic Reviews* 2005, Issue 2. Art. No.: CD004095. DOI: 10.1002/14651858.CD004095.pub2.



Cognitive behaviour therapy for schizophrenia

Cognitive behavioural therapy is one of the talking therapies that is suggested to be of value to people with schizophrenia. This systematic review suggests that it may well be of value, at least in the short-term.

Cognitive behavioural therapy should be further evaluated in various clinical settings and the effects for both expert and less skilled practitioners should be compared.

Jones C, Cormac I, Silveira da Mota Neto JI, Campbell C. Cognitive behaviour therapy for schizophrenia. *The Cochrane Database of Systematic Reviews* 2004, Issue 4. Art. No.: CD000524. DOI: 10.1002/14651858.CD000524.pub2.

For more information, contact the South African Cochrane Centre on (021) 938 0438 or email Joy.Oliver@mrc.ac.za.

The Alcohol & Drug Abuse Research Unit of the MRC has been a major force in promoting awareness of the extent and burden of drug and alcohol abuse in South Africa, with their work resulting in policy changes in South African liquor laws and changes in norms and standards for drug treatment centres.

Recently, research done in the unit has led to the production of a practical tool that is actively helping community members and the police fight drugs on our streets: *The South African Drug Enforcement Handbook*, a guide to identifying street drugs and the people that use and sell them.

The booklet was developed from the results of a study – called the 3 Metros Study – that looked at people who had been arrested for various crimes. Researchers tested over three thousand people at ten police stations in Cape Town, Durban and Johannesburg. The suspects who agreed to take part in the study completed a questionnaire and were tested for both drugs and HIV.

Throwing the book at drugs

The abuse of drugs and crimes associated with it is a scourge that is devastating our society – but MRC researchers are playing a practical role in drug intervention efforts, write **LORENZO RAYNARD** and **ELMIEN WOLVAARDT**.

The results of this study were then used to draw up profiles of drug users and dealers, which were then included in the handbook. For example, the study found that urban cocaine users are more likely to be female, white or coloured and under the age of 30.

The handbook has proved to be of great use to law enforcement officers, as Johannesburg Police Commissioner Oswald Reddy points out: 'Not all officers are aware of the extent of the drug problem and, with the assistance of the handbook, they are able to familiarise themselves with the most recent drugs on the street.'

'It is difficult to keep abreast of developments in the ever-changing drug scene in South Africa. In order to be effective, cops on the beat need the latest information about cocaine, hashish and drugs like tik or ecstasy,' he said.

The handbook also indicates which drugs are more problematic in some areas of the country than in others, and the profile information on user and dealer types allows the officer to know which communities are most at risk and when to be most vigilant to signs of drug use.

Professor Charles Parry, Director of the Unit, explains that research on trends and consequences of the abuse of alcohol and other drugs has been ongoing since 1996. The primary sources of data are drug treatment centres, the South African Narcotics Bureau, mortuaries, and trauma units. The South African Community Epidemiological Network on Drug Use (SACENDU), the Alcohol and Drug Research Unit of the MRC, the Institute for Security Studies,

and the National Institute of Justice of the United States, joined forces to make the study and the booklet a reality.

Drug use generally is of concern, but it is when drug users become involved in criminal activities that it becomes a problem for the police and criminal justice system. A drug-using lifestyle often involves criminal activity: drug users are more likely to commit crimes because they do not participate in the legitimate economy and are exposed to situations that involve crime. This lifestyle is often supported by illegal activities, like shoplifting and burglary.

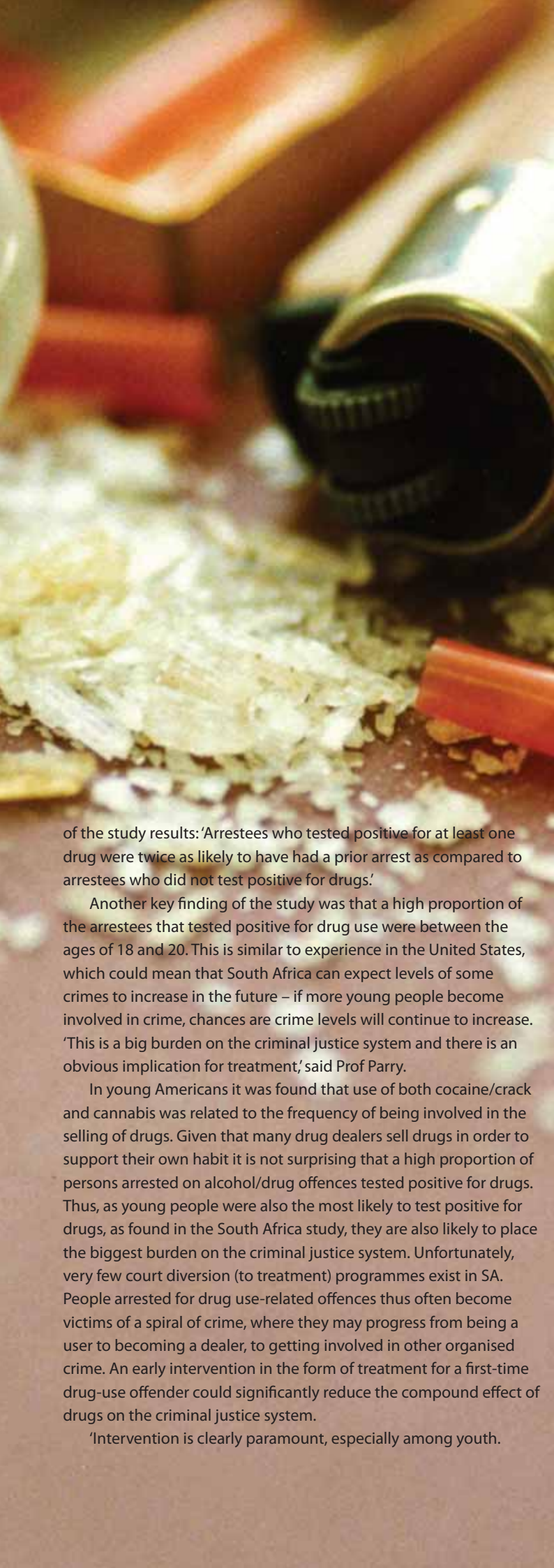
Law enforcement officers have always been aware of the link between drugs and crime, as pointed out by police commissioner Reddy, who was the station commissioner of Hillbrow police station when the study was conducted. Reddy says: 'While we were always aware of the link between crime and drugs, we never had concrete evidence that would confirm our suspicion. The three categories of involvement with drugs are the users, the dealers on the street

— commonly referred to as "runners" - and the "kingpins", or the suppliers of drugs. There are different criminal activities associated with each of these. The user will start engaging in petty crime, like cell phone theft, in an attempt to support their addiction. The runners often have a track record of criminal activity and engage in more violent crime, while the kingpins, the group we are most focused on, engage on a more organised, syndicate level of criminal activity.'

According to Prof Parry there is a strong correlation between the use of substance and crime. Some people take substances and that has an effect on their behaviour — they do things they would not do if they were not under the influence. Since alcohol is a disinhibitor, you most likely would be speeding while driving under the influence. The withdrawal symptoms of harder drugs can result in some people exhibiting violent behaviour in their desperation to acquire money or goods to exchange for drugs. There is also a link between systemic crimes, like turf wars, gangsterism and vigilanterism, and the drug trade.

Bronwyn Myers, a senior scientist in the unit, indicates that drug-related crime research has revealed that habitual drug users frequently suffer from "co-occurring psychological problems". She says that mandrax, combined with other drugs or alcohol, is capable of producing incredible aggression while leaving users numb to the emotions that would normally deter them from excessively violent acts.

Andreas Plüddemann, also a senior scientist in the unit, said



Internationally, a variety of prevention programmes have been designed to break the cycle of drugs and crime as well as the burden placed on the criminal justice system by persons arrested for drug-related crimes. These include community development programmes, diversion programmes, treatment programmes in prison, and treatment programmes in general,' says Andreas Plüddemann.

The pocket-sized *South African Drug Enforcement Handbook* is available in English and the compact format allows for quick referencing. The booklet would also be ideal for parents/educators when wanting to equip themselves with how to recognise drugs, understand the effects, and perceive the signs of drug consumption and dealing.

As Prof Parry says: 'Helping people get out of drugs may help them get out of crime.'

To obtain a copy, contact Prof Charles Parry, Director of the Alcohol and Drug Abuse Research Unit; e-mail: charles.parry@mrc.ac.za. Electronic versions can also be obtained at:

<http://www.iss.co.za/pubs/Other/SADrugHBSep04/Contents.htm>

Key findings from the 3 Metros Study

- Nearly 1 in every 2 people the police arrest is under the influence of some kind of drug. Many alleged offenders therefore consume drugs, and drug law enforcement can lead to the arrest of people involved in many other criminal activities.
- The most common drug being used, at the time the study was conducted, was dagga, followed by mandrax, with cocaine in third place.
- A large percentage of the people arrested for housebreaking (70%), car theft (74%), and robbery (53%), tested positive for having used drugs.
- In Gauteng, 35% of arrestees said they used alcohol and/or other drugs to help them to commit the alleged offence.
- Levels of substance abuse and substance abuse-related problems are higher in Cape Town than in Johannesburg or Durban. The number of people arrested under the influence of mandrax in Cape Town is about ten percent higher than in Durban and Johannesburg.
- Cocaine (crack) is strongly associated with robbery, and mandrax with burglary.
- 54% of arrestees under 20 years of age tested positive for any drug.
- Cocaine use was highest among the 20–30-year age group.

Drug user profiles

- Dagga users are more likely to be male, under the age of 20, and arrested for thefts or drug-related crimes.
- Mandrax users are more likely to be male, Indian or Coloured, under the age of 25, and arrested for burglary, shoplifting, theft out of a motor vehicle, drug-related crimes, or violations of the Firearms Act.
- Cocaine users are more likely to be female, White or Coloured, under the age of 30, and arrested for common robbery, prostitution and other sexual offences, burglary, theft out of motor vehicle, trespassing and drug offences
- Of those in the study who tested positive for heroin and admitted using it, all were white. However, recent statistics from drug treatment centres indicate that most heroin users are coloured males, averaging at approximately 24-years of age.
- Even though tik users were not part of the 3 Metros study, current statistics revealed that over 90% of users are coloured and about 75% are male. The average tik user is between the ages of 15 and 25 years, with the average age of patients in treatment being 21

of the study results: 'Arrestees who tested positive for at least one drug were twice as likely to have had a prior arrest as compared to arrestees who did not test positive for drugs.'

Another key finding of the study was that a high proportion of the arrestees that tested positive for drug use were between the ages of 18 and 20. This is similar to experience in the United States, which could mean that South Africa can expect levels of some crimes to increase in the future – if more young people become involved in crime, chances are crime levels will continue to increase. 'This is a big burden on the criminal justice system and there is an obvious implication for treatment,' said Prof Parry.

In young Americans it was found that use of both cocaine/crack and cannabis was related to the frequency of being involved in the selling of drugs. Given that many drug dealers sell drugs in order to support their own habit it is not surprising that a high proportion of persons arrested on alcohol/drug offences tested positive for drugs. Thus, as young people were also the most likely to test positive for drugs, as found in the South Africa study, they are also likely to place the biggest burden on the criminal justice system. Unfortunately, very few court diversion (to treatment) programmes exist in SA. People arrested for drug use-related offences thus often become victims of a spiral of crime, where they may progress from being a user to becoming a dealer, to getting involved in other organised crime. An early intervention in the form of treatment for a first-time drug-use offender could significantly reduce the compound effect of drugs on the criminal justice system.

'Intervention is clearly paramount, especially among youth.

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“My vision for MRC is that of a happy and humane organisation, respected in South Africa and throughout the world. An MRC whose relevant and excellent research, is translated into sound health policy; good health practice; novel products such as drugs, vaccines and natural medicines; and health promotion that is accessible to all the people.”

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Getting to know Prof MBewu

MRC NEWS recently had the privilege of interviewing the President of the Medical Research Council, Specialist Cardiologist, and Co-chairperson of the Inter Academy Medical Panel.

Prof Anthony MBewu's introduction to the MRC came when the former Minister of Health, Nkosazana Dlamini-Zuma appointed him as a Member of the first fully transformed Board of the MRC in 1995. After a two year spell as a Consultant Cardiologist at the University of Cape Town he was appointed Executive Director for Research at the MRC in 1996; and then nine years later as President of the MRC in 2005.

Prof MBewu was born on 15 January 1960, the only son of parents who were both teachers. His grandfather, Dr Donald Mtimkulu had been Headmaster of Ohlange in KwaZulu Natal, and subsequently a Professor of Sociology at Fort Hare University. At the time of the extension of the Bantu Education Act to the Universities in 1959, Dr Mtimkulu, together with most of the Faculty at Fort Hare resigned in protest, rather than teach an inferior form of higher education.

Dr Mtimkulu left for Zambia, but briefly returned in 1963 to pick up his grandson due to the family's concern about the severely limited prospects for the boy in apartheid South Africa. In 1967 the family moved to the UK where Prof MBewu lived until 1994.

He says the motivation behind being a doctor was, as for most black South Africans at the time, a matter of circumstance rather than choice. "South Africans were scattered all over the world, as guests of various countries, and one was constrained to enter occupations that would guarantee one's stay as a desirable citizen, in order to avoid deportation to South Africa and an apartheid jail as a political prisoner. What better choice than medicine, which is in demand in every country in the world. At the time, in the early 1970s, the prospect of being able to return to a free and democratic South Africa seemed a distant and unlikely reality!"

Nevertheless, he was able to return to South Africa two weeks before the first democratic election in 1994. Ironically, he had already voted twice in British General Elections before he was able to vote in his own country. His intent was to participate in building the new

nation of South Africa, rather than the ease and comfort of life as Consultant Cardiologist in the UK.

"The British were extraordinarily generous to me and other exiles, providing me with an excellent school education, and free medical education at Oxford and London Universities. But after completing specialisation in cardiology in Manchester, and a research doctorate in preventive cardiology with London University; I knew that I would be able to make a much greater contribution in South Africa than in the UK".

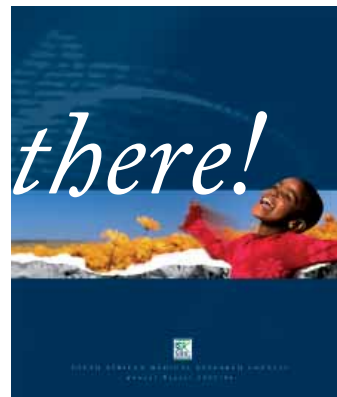
In the 12 years since 1994, Prof MBewu says, the MRC has undergone a remarkable transformation, from a predominantly white and male organisation in 1994 to having 67% female employees working with an 80% black staff complement that almost 'reflects the face of South Africa'. Furthermore, the organisation has opened up not only to all the communities of South Africa; but also to the world - with its benchmark's in science rising to meet those of the international community. This is reflected for example in the fact that when he arrived in 1996, Prof MBewu asserted that no one could become a Unit Director without a research doctorate - and MBChB was not equivalent to a research doctorate. Now, he says, 10 years later one needs a research doctorate simply to become a specialist scientist - a standard that is on a par with sister health research organisations overseas.

"My vision for the MRC is that of a happy and humane organisation, respected in South Africa and throughout the world. An MRC whose relevant and excellent research, is translated into sound health policy; good health practice; novel products such as drugs, vaccines and natural medicines; and health promotion that is accessible to all the people. I think we are well on track to meeting that within the next few years; and it is testimony to the hard work, and courage to embrace change that all the MRC staff has displayed".

Already we see signs of his vision happening within the MRC.

The MRC's Annual report *it's out there!*

Media release on the occasion of the launch of the 2005/6 Annual Report of The South African Medical Research Council



It has been another productive year for research outputs at the Medical Research Council. Outlined in the latest Annual Report, tabled in parliament recently are the record of our research productivity and research highlights.

In the area of Research Productivity the Medical Research Council has been one of the few research institutions in South Africa to show consistent growth over the past ten years. Peer-reviewed publications have grown by 8.8% over the past year, from 568 in the year 2004/5 to 618 in the year 2005/6.

This is the largest research output of any dedicated health research institution in South Africa, and possibly on the African continent.

The following information proves this point, they are:

The MRC produces 40% of all health research publications in South Africa, despite receiving only 10% of the health research expenditure in the private and public sectors.

The ratio of peer-reviewed publications per senior scientist is 1.8, up from the ratio of 1.13 in 2005 (61% increase). This productivity ratio is higher than that of most research institutions in South Africa.

In terms of the entire South African science system, a report from the Academy of Science of South Africa notes that 16 000 academics publish about 7 000 research papers a year.

The MRC therefore produces nearly 10% of South Africa's research output with only 3.7% of South Africa's scientists; suggesting that MRC scientists are three times as productive as South African scientists in general. This is a testimony both to the hard work of MRC scientists and support staff and to the excellence of the work they produce.

In the area of Research Excellence, not only have we increased our volume of research production in terms of peer-reviewed publication, the MRC also strives to maintain and extend the excellence of its research. This can be measured in a number of ways.

One measure is the number of prestigious NIH RO1 grants held by MRC scientists, which, currently stands at 6: more than any other South African institution (Reddy: 2, Morojele: 1, Vaughan: 1, Jewkes: 1 and Mathews: 1).

Another measure of MRC research excellence is the number of MRC unit directors who are A-rated by the National Research Foundation (NRF). The number currently stands at five - more than any other health research institution, and two more than in 2004/05. The A-rated scientists are Pettifor, Opie, Noakes, Brombacher and Vaughan.

In addition, three MRC scientists have B-ratings with the NRF (Gelderblom, Shephard and Sewram); and three have NRF Presidential P ratings (Mayosi, Moolman-Smook and Nieslar).

Several MRC scientists hold Wellcome Trust Fellowships (Passmore, Moolman-Smook); and one, Prof Himla Soodyall, was awarded the Order of Mapungubwe by President Thabo Mbeki.

In the area of Capacity Development at the MRC, it has remained steady, with a 22% increase in the number of PhD students enrolled in the 47 MRC research units, up from 176 in 2005 to 215 in 2006.

A total of 49 PhDs graduated in the past year.

Of the 215 PhD students in MRC research units, 49 are funded by the MRC and 18 (37%) of these were African black.

The transformation agenda embarked upon by the MRC Board is clearly bearing fruit, with its emphasis on the training of black and female scientists at doctoral and post-doctoral level.

Allow me to highlight a few exciting research highlights from our 45 research units throughout South Africa.

HEALTH & DEVELOPMENT RESEARCH GROUP

One of the key research highlights performed this last year by this unit has been the discovery of high blood lead levels (in painted toys) that are high enough to be causing reductions in their IQ scores, inhibiting their performance at school, and compromising their ability to achieve over their lifetimes.

ALCOHOL AND DRUG ABUSE RESEARCH UNIT

The Unit's work in the area of alcohol and drug abuse has resulted in policy changes in norms and standards for drug treatment centres.

Research done in the unit has led to the production of a practical tool that is effectively helping community members and the South African Police Services fight drugs on the streets: the South African Drug Enforcement Handbook, a guide to identifying street drugs and the people that use and sell them. The pocket size handbook is available in English. The handbook is available to anyone, ideally for parents/educators in helping them to recognise drugs, understand the effects and perceive the signs of drug consumption and dealing.

HIV PREVENTION RESEARCH UNIT

The above-mentioned research highlights are only but a few of the many we have had this year.

In the area of Research Translation, the MRC has again showed leadership in this area. Research makes no difference to health and quality of life unless it is translated into policy, practice, products and health promotion.

Highlights in research translation in the past year included the:

Youth Fitness Charter and the Vuka South Africa! Movement, which aim to get young people and South Africans in general physically active in order to improve and protect their health. These have been the culmination of years of productive work done by the Health Promotion Directorate of the National Department of Health and several MRC units, including Exercise Science and Sports Medicine, Health Promotion Research and Development and Chronic Diseases of Lifestyle. The National Youth Risk Behaviour Survey was particularly influential in this regard.

Translation of the results of MRC research over many years, particularly that of the Health and Development Research Group, was instrumental in legislation phasing out the use of leaded petrol in South Africa as from 1 January 2006, the decision by the Department of Health to regulate the use of lead in paint and the launch of the first nationwide lead awareness campaign by the Minister of Health.

I am pleased to present to you the South African Medical Research Council's Annual Report of 2005/6. I urge you to read the Annual Report and to engage with any of our research units.

For more information contact: Julian Jacobs on 082 454 4902