

MHRA issues new advice on SSRI dose changes, withdrawal and the risk of suicidal behaviour

New advice to patients and doctors about selective serotonin reuptake inhibitors has been issued this week by the Medicines and Healthcare products Regulatory Agency. The National Institute for Clinical Excellence has also published new guidelines for the treatment of depression and anxiety.

The MHRA has concluded that the balance of risks and benefits of all SSRIs, in their licensed indications in adults, remains positive, but that clear advice needs to be given with regard to withdrawal reactions, dose changes and suicidal behaviour. It recommends that in most cases the lowest effective dose of any SSRI should be prescribed and that there should be careful monitoring of changes in symptoms when starting and changing treatment. It also advises strengthened warnings about the risk of withdrawal reactions and clearer advice on the risk of suicidal behaviour.

The report emphasises that, although a modest increase in the risk of suicidal thoughts compared with placebo cannot be ruled out, there is good evidence that there is no clear increase in the risk of suicide compared to other antidepressants. However, 18–30-year-olds should be closely monitored and assessed separately in further research, because of their increased background risk of suicidal behaviours.

SSRI treatment is now recommended for moderate to severe depression only

The report also recommends that treatment with venlafaxine (Efexor) should only be initiated by specialists. Wyeth Pharmaceuticals, which markets Efexor in the UK, has said it will challenge the MHRA action.

David Pruce, director of practice and quality improvement at the Royal Pharmaceutical Society, commented: "Pharmacists are likely to receive queries from patients who have read about this in the media and may be concerned. It is important to reassure patients that no one needs to stop treatment as a result of this new advice. If after reading the de-

tails of the advice anyone is concerned they should contact their doctor to discuss their treatment."

He added: "Concerns have been expressed over the length of time that it has taken for the MHRA to formulate this advice. While accepting that it was important to assess all the available evidence before publishing advice, we share these concerns. We urge the MHRA to review its processes to see whether they could be improved."

The new NICE guidance on anxiety and depression takes account of the MHRA advice and has been designed to help health professionals implement it. The guideline recommends that, for anxiety, patients should be offered (in order of effectiveness) psychological therapy, an SSRI or self-help, and that decision-making should be shared by the patient and health care professionals. For depression, the guideline recommends that antidepressants should not be used for the initial treatment of mild depression, because the risk-benefit ratio is poor and psychological treatments can be as effective. When an antidepressant is prescribed, it should be an SSRI rather than a tricyclic, because SSRIs are less likely to have to be discontinued because of side effects.

Further details are accessible via *PJ Online* (www.pjonline.com/links/pj).

Campaign highlights range of out-of-hours services

Patients are happy to see health professionals other than GPs if it means a faster service out of surgery hours. The finding is part of a Developing Patient Partnerships campaign launched to explain out-of-hours services.

DPP spokesman David Wrigley said: "The finding that 85 per cent of people are happy for pharmacists to be more involved in advising them about health issues suggests patients are becoming less reliant solely on the GP."

A central part of the DPP campaign is a new leaflet — "Step by step: getting help

from health services" — which outlines three steps to getting help. The first is to consider self-care, and the leaflet highlights the role that pharmacists play in providing advice and treatment for minor ailments. Step two is to see further advice or treatment from NHS Direct or a GP and the third step explains how to seek help in emergencies.

The DPP leaflet will be made available through primary care organisations. Its content is accessible via *PJ Online* (www.pjonline.com.links/pj).

UK to introduce some European medicines law early

Plans to implement three aspects of new European medicines legislation in the UK before they become mandatory are to go ahead (*PJ*, 7 August, p175).

From 1 January 2005, companies that achieve the reclassification of medicines from POM to P or from P to GSL on the basis of significant test or trial results will get a year's data protection for their results. This means that competitor companies will have to carry out their own tests if they want to switch equivalent products.

Also from 1 January 2005, companies will be required to tell the Medicines and Healthcare products Regulatory Agency about any new information that impacts on the risk or benefit of a medicine.

From 1 July 2005, patient information leaflets for new products will have to reflect the results of tests on user groups. This change was originally proposed for April 2005.

European legislation requires these, and a range of other changes, to be implemented by the end of October 2005.

The Society

Council election regulations

The Council is to consult the Society's members for a second time on regulations governing the election and appointment of members of the future reformed Council. The second consultation is needed because of changes required by the Department of Health since the first consultation. To help ensure that the reformed Council can still be in place by the end of May 2005, the Society's annual general meeting has been put back towards the end of that month. In addition, the Society's new Charter was brought into effect as from 7 December so that the Council could make the revised regulations under that Charter (p863).

Collection of retention fees

An article this week answers a range of questions about the procedures for the collection of members' retention fees for 2005 (p865).

Pharmacists part of team to manage chronic disease

A disease management programme involving 6,000 patients run by US managed health care company Kaiser Permanente has shown that teams of pharmacists, technicians and nurses can improve outcomes and reduce costs in the treatment of dyslipidaemia and hypertension.

Low-density lipoprotein values of less than 3.4 mmol/L were achieved in 94 per cent of patients in the programme compared with 67 per cent in a control group. Control of hypertension, as measured by a blood pressure of less than 140/90mmHg, was achieved in

70 per cent of patients in the programme compared with 67 per cent in the control.

Other benefits included a 9 per cent reduction in visits to the emergency department and a 22 per cent decrease in hospital admissions. A survey reported that 99 per cent of patients are satisfied with the service. Labour costs per patient involved in managing drug treatment reduced significantly on implementation of the new model from \$720 to \$105.

The programme involves nurses performing an initial patient assessment. Pharmacists

then initiate drug therapy and laboratory tests using a protocol, monitor blood pressure and laboratory results and adjust treatment accordingly. Pharmacy technicians are also involved in communicating with patients on maintenance therapy. There are clear entry and exit criteria for patients and a robust clinical record system is in place.

This project was awarded one of this year's American Society of Health-System Pharmacists Pfizer best practice awards at the ASHP mid-year clinical meeting in Orlando, Florida, on 5 December.

NPA outlines benefits of independent prescribing by pharmacists

Independent prescribing by community pharmacists will increase patient choice, access and equity, according to a position paper published this week by the National Pharmaceutical Association.

The Government is expected to issue a public consultation early next year on extending independent prescribing rights to pharmacists. This will follow discussions on the subject which are currently ongoing.

The NPA position paper will form the basis of the association's response to the consultation. It outlines the benefits of independent prescribing by community pharmacists for patients, the NHS and the profession,

and the issues that need to be addressed in order for independent prescribing to be taken forward.

Among the issues are how prescribing will be funded, whether or not prescribing should be restricted to a formulary, and clinical governance and probity issues.

Ash Soni, chairman of the NPA, commented: "The pharmacy profession is well placed to play a significant role in independent prescribing and community pharmacists have a particular contribution to make in increasing access and choice for treatment for minor ailments both during normal hours and out of hours."



Susan Nisbet

Independent prescribing by pharmacists is on the agenda for 2005

Hospital cleanliness guidance

Recommendations on the minimum number of times specific hospital areas should be cleaned and a best practice guide on evaluating and awarding contracts to cleaning firms were published by the Department of Health on 7 December.

New hepatitis C campaign

A new public health campaign about hepatitis C was launched this week by the Department of Health. Further information at www.hepc.nhs.uk

Sativex delayed by CSM

More evidence of the effectiveness of Sativex, GW Pharmaceuticals's cannabis-derived treatment for spasticity in multiple sclerosis, has been demanded by the Committee on Safety of Medicines. GW is to carry out further studies, as requested, but also intends to appeal to the Medicines Commission for the granting of a product licence on the basis of the current evidence.

Supplementary prescribing pack for pharmacists in Scotland

A pack about supplementary prescribing is being sent to all community and hospital pharmacies in Scotland by NHS Education for Scotland.

The pack outlines how and where training is offered, how pharmacists can apply for training, and provides examples of the types of materials that the supplementary prescribing courses cover.

Anne Watson, assistant director of pharmacy at NES, told *The Journal* that the aim of the pack is to stimulate interest in the subject.

"We hope it will encourage pharmacists to consider applying, through their NHS boards, for the supplementary prescribing courses which are offered at both of Scotland's schools of pharmacy," she said. "The pack also aims to develop pharmacists' skills and knowledge in supplementary prescribing."

Altogether, 250 pharmacists in Scotland have completed or are undertaking supplementary prescribing training, with 125 qualified to date. A further 160 are to start the course in the next few months.

NatPaCT provides help for new contract implementation

Two new tools to help primary care trusts plan for the implementation of the new community pharmacy contract in England and Wales have been launched.

The documents, produced by the National Primary and Care Trust Development Programme (NatPaCT), are a complete version of a pharmaceutical needs assessment toolkit and an implementation plan for the new contract. The plan provides a month-by-month guide to tasks that should be completed in the run-up to implementation.

Heather Gray, project director of the medicines management, pharmacy and prescrib-

ing significant issues group at NatPaCT, commented: "I hope that the toolkit will support PCTs in identifying needs and working out how to get pharmacy involved." She said that by now all PCTs should have started thinking about how the new contract will be implemented but added that the NatPaCT documents, along with others produced by the National Pharmaceutical Association and Centre for Pharmacy Postgraduate Education, provide something tangible to help with the process.

Both documents are accessible via *PJ Online* (www.pjonline.com/links/pj).

Anastrozole should be preferred initial treatment

Anastrozole should be the preferred initial treatment for postmenopausal women with localised hormone-receptor positive breast cancer, according to final results from the ATAC (Arimidex, Tamoxifen, Alone or in Combination) trial.

The ATAC trial compared five years of using the aromatase inhibitor anastrozole (Arimidex) alone or tamoxifen alone with both drugs in combination, as adjuvant therapy in 9,366 postmenopausal women with localised breast cancer. Initial analyses of trial results showed that anastrozole prolonged disease free survival compared with tamoxifen (*PJ*, 15 November 2003) and reduced the incidence of contralateral breast cancer.

Five-year follow up data published this week show that, compared with tamoxifen, anastrozole increases disease free survival (575 vs. 651 events, hazard ratio 0.87, 95 per cent confidence interval 0.78–0.97) and time to recurrence (402 vs. 498, hazard ratio 0.79, CI

Anastrozole prolonged disease-free survival in patients with breast cancer

0.70–0.90). These advantages were greater for hormone receptor positive patients. The incidence of contralateral breast cancer was reduced by 53 per cent with anastrozole in hormone-receptor positive patients (95 per

cent CI 25–71). Overall survival was similar for both drugs although withdrawal due to adverse events was less common with anastrozole (11.1 per cent) than tamoxifen (14.3 per cent, $P=0.0002$).

Compared with tamoxifen, anastrozole treatment was associated with significant reductions in the incidence of endometrial cancer, thromboembolic events, ischaemic cerebrovascular events, vaginal bleeding, hot flushes and vaginal discharge, although fracture rates and arthralgia were more common in the anastrozole group.

The researchers say that although their results are only applicable to anastrozole, current data suggest that it is not appropriate to wait five years before starting an aromatase inhibitor, and say that the most effective and well tolerated therapy should be offered at the earliest opportunity.

The trial, published early online (www.thelancet.com), was sponsored by AstraZeneca.

Study shows Glivec has long-term efficacy

Patients treated with Glivec (imatinib) maintain their response to therapy long term, new data presented this week at the American Society of Haematology (ASH) in San Diego, California, have indicated. The patients were newly diagnosed with Philadelphia chromosome-positive chronic myeloid leukaemia in chronic phase. Data at 42 months from the IRIS (International Randomized IFN versus STI571) study show 91 per cent overall sur-

vival and 98 per cent progression-free survival in patients with near absence of molecular-level chronic myeloid leukaemia.

A second study, presented at the same meeting, showed that a similar group of patients on a 800mg per day dose achieved a greater molecular response and were more likely to achieve a complete cytogenetic response than patients on the currently recommended 400mg per day dose.

Sleeping pill prescribing levels “cannot be justified”

Levels of prescribing of hypnotic drugs represent “a risk to individual and public health that cannot be justified”, the latest issue of *Drug and Therapeutic Bulletin* warns (*DTB* 2004;42:89).

Commenting on the article, Ike Iheanacho, editor of *DTB*, said: “Long-term use of hypnotic drugs is common, even though it can cause a range of troublesome unwanted effects and there is little evidence to show it is helpful.”

“Dealing with this problem,” he added, “requires a change in culture, including better education about how to tackle sleep problems and more widespread availability of effective alternatives to drug treatments.”

DTB recommends that hypnotic drugs should only be given intermittently and for short periods to alleviate acute distressing insomnia caused by brief events and that they should be completely avoided in elderly people and in patients with chronic insomnia.

High folic acid doses require further investigation

Women taking high doses of folate throughout pregnancy may be more likely to die from breast cancer in later life, a new study suggests (*BMJ* 2004;329:1375). However, the association was not statistically significant and an accompanying commentary (*BMJ* 2004;329:1376) argues that the reported association is most likely to be a result of chance.

The study presents preliminary data following up 2,928 women who enrolled in a trial of folate supplementation in pregnancy in the 1960s. They found that 1.5 per cent of those who took high-dose folate supplements died of breast cancer, compared with 0.8 per cent of those who had taken a placebo. The authors, from Aberdeen Maternity Hospital, acknowledge that this may be a chance finding. However, they argue that their finding, together with a recent study showing that rats fed high and low folate diets had greater mammary tumorigenesis than rats fed sufficient folate, suggest that further studies of the role of high doses of folate in breast cancer are needed.

NPSA updates methotrexate patient safety alert

The National Patient Safety Agency has published an update to the patient safety alert about oral methotrexate that it issued earlier this year (*PJ*, 31 July, p144).

The action follows confusion among patients and clinicians about one aspect of the alert. The alert had included templates that set out the core information the NPSA expects patients to receive. However, this had resulted in a number of queries.

Therefore, the update states: “The NPSA wishes to emphasise that the recommended core content should be regarded as only to be used in conjunction with existing guidance and patient information from authoritative sources. It is not intended to replace such material.” It adds that staff should adapt the document for local preferences, style and approach. “If health care staff are confident that the information they currently provide to patients addresses all the areas outlined within the patient information section of the alert, no further action is required under [this point],” the update notes.

Drug adherence poor in osteoporosis

Health care professionals' perception of how well patients adhere to osteoporosis treatment regimens may be quite different from the actual situation, a new report suggests.

"The real facts of life in osteoporosis", published by the National Osteoporosis Society, includes data from a questionnaire showing that 69 per cent of specialist rheumatology nurses believe that patients adhere well to osteoporosis treatment regimens. However, the report highlights data showing that 77 per cent of patients taking a once-daily bisphosphonate stop taking their treatment within a year, as do almost two-thirds of patients taking the drug once a week. The report says that compared with non-adherent patients with osteoporosis, adherent patients have a reduction in fracture rates of 16–23 per cent.

The report states: "There is an urgent need for greater clinician-patient communication of the benefits of long-term adherence to therapies for the treatment of osteoporosis."

Joanne Shaw, director of Medicines Partnership, commented: "The key to effective use of medicines is reaching informed agreement between health professionals and patients about the treatment to be followed. This requires good information about the risks and benefits of treatment and the risks of non-treatment. Research shows that patients are not always informed of treatment options or asked for their opinion when decisions are made. Once in-

formed agreement has been reached, many patients also need ongoing support for medicine-taking." She added: "Medication review is key to this."

Better communication between health workers and patients can improve adherence

Little evidence base for use of teriparatide

More trials are needed to support the use of the osteoporosis drug teriparatide (Forsteo, Eli Lilly), the latest issue of *Drug and Therapeutic Bulletin* argues (2004;42:93). Teriparatide is the first parathyroid hormone derivative licensed for the treatment of women with postmenopausal osteoporosis.

"There is no convincing published evidence to support the use of teriparatide in preference to older treatments for women with postmenopausal osteoporosis," Ike Iheanacho, editor of *DTB*, said. The *DTB* says that few published studies have assessed teriparatide at its licensed dose and no adequate studies have compared its effects with those of established drugs. It also argues that there is an urgent need to investigate the drug's safety as studies have shown that rats treated with teriparatide are more likely to develop bone tumours.

A spokesman for Eli Lilly commented: "The clinical and economic value of teriparatide has been recognised by recommendations from the Scottish Medicines Consortium and the All Wales Medicines Strategy Group for its use in high risk patients with no age restrictions. Also, the National Institute of Clinical Excellence draft guidance recommends that teriparatide should be used in patients that have had an unsatisfactory response with bisphosphonate therapy, aged 65 or older and who meet certain clinical criteria. However, we have submitted an appeal to NICE with regard to the restrictions on age imposed and await an outcome."

News in brief

Simvastatin guidance card

Pharmacists registered as working in hospital or community pharmacy will receive Royal Pharmaceutical Society guidance on the use of over-the-counter simvastatin with this week's *Journal*. Extra copies are available via a link on *PJ Online* (www.pjonline.com/links/pj).

Vantage diabetes service

Vantage Pharmacy has launched a diabetes screening service as part of its Health Watch package. AAH says that the service is one of a number in the package that will help pharmacists deliver the new pharmacy contract. The package is only available to Vantage Health Watch members.

Short term NSAIDs for osteoarthritis

Use of non-steroidal anti-inflammatory drugs in patients with osteoarthritis of the knee in the long-term cannot be recommended, say the authors of a new meta-analysis. They reviewed 23 eligible trials and found that NSAIDs reduced pain 15.6 per cent better than placebo for short term use (2–13 weeks). They conclude that because of the adverse effects of oral NSAIDs only limited use can be recommended (*BMJ* 2004;329:1317).

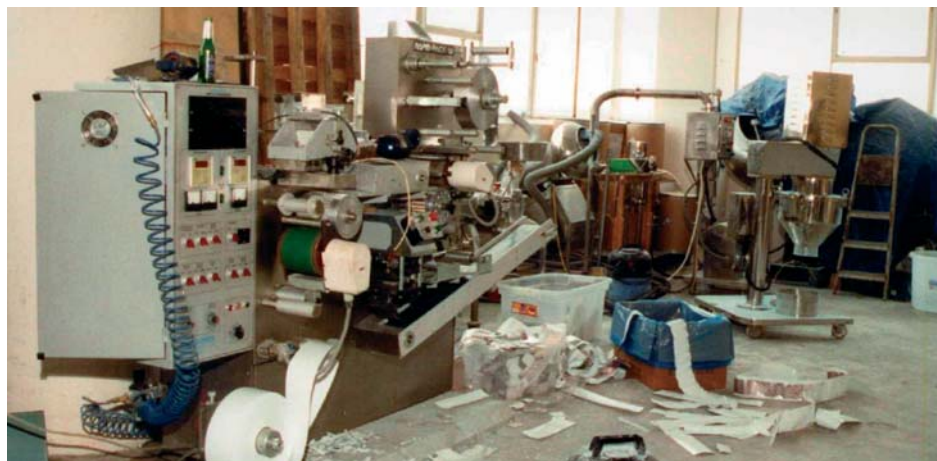
London counterfeit medicines factory closed down

Three men have been prosecuted and two of them jailed after the discovery by police of two illicit medicines factories making counterfeit medicines in north London in April this year.

The two jailed men pleaded guilty to charges of conspiracy to supply Class C Controlled Drugs (diazepam and nitrazepam), conspiracy to commit trade mark offences in relation to Pfizer's Viagra and conspiracy to manufacture or assemble medicines containing steroids. The third man received a suspended prison sentence after pleading guilty to conspiracy to manufacture or assemble a sildenafil product.

After the discovery, Medicines and Healthcare products Regulatory Agency investigators inspected the site and assisted the police with the prosecutions. They estimated that the factory had the capacity to manufacture 500,000 tablets a day.

Detective Inspector Andy Chalmers said: "The scale of production was staggering, with sophisticated production equipment and millions of tablets stored on pallets.



Blister packing equipment at the illicit drugs factory

Passing sentence at Harrow Crown Court on 19 November, Judge Barrington Black said: "Considerable sums are invested by pharmaceutical companies to develop products in a safe and controlled way. It is a serious matter when the public are

hoodwinked to the extent that such products, although structurally akin to the correct ones, are being produced in an environment without the necessary precautions, in a makeshift and dangerous manner."

Irresponsible spoof advert

Using fictitious medicines in advertisements is misleading and irresponsible.

This ruling came after the Medicines and Healthcare products Regulatory Agency complained to the Advertising Standards Authority about a Newspaper Marketing Agency advertisement featuring a fake medicine claiming to offer pain relief for women.

The ASA ruled that the advertisement should have made it clear that the medicine was a spoof so that people were not misled.

AstraZeneca executive to chair science forum

AstraZeneca's chief executive Sir Tom McKillop is to chair a new science forum announced by Chancellor of the Exchequer Gordon Brown in his pre-budget statement to the House of Commons last week.

The forum will aim to increase company investment in research and development. To encourage R&D, the Chancellor announced that he would re-examine the R&D tax credit for medium-sized science-based firms.

Philip Wright, director of science and technology at the Association of the British Pharmaceutical Industry, said: "We are delighted to hear that the Government has recognised the R&D tax credit gap for growing biopharmaceutical companies and that it is going to see how best it can help the mid-sized firms that are often lagging behind their US counterparts."

The ABPI also welcomed the new forum.

Hull pharmacist wins UniChem award

A pharmacist in Hull has been named the overall winner of this year's UniChem Great Business Award following a major refurbishment and the launch of new services at his pharmacy.

Raymond Hall opened The Pharmacy in Hull in 1967 and this year has been his most successful to date. The award recognises one service in particular that he has recently set up named "One call does it all". Through this service, he orders, collects and delivers patients' repeat prescriptions. Mr Hall also offers a number of other services including chlamydia testing, smoking cessation and benzodiazepine monitoring.

Other winners were Sanjay Patel, of Jade Pharmacy in Wembley, London, who won the professional development award and Lisa Martin, of Lisa Martin Pharmacy in New Alresford, Hampshire, who won the business development award.

The awards were presented on 3 December at a dinner at the Celtic Manor Resort in Newport.



Raymond Hall (centre) receives his award from UniChem chairman Mike Smith (left) and managing director David Coles (right)

US pharmacists call on congress to expand older patients' medication management services

US pharmacists are calling on congress in Washington DC to allow them to provide comprehensive medication management services to all patients in the Medicare health system. Medicare provides health care for those over the age of 65 years.

A law passed last year will mean that certain patients will be entitled to limited medication management services from January 2006. Patients with multiple chronic diseases, multiple drug therapies and high cost drugs are among those included. Pharmacy is currently only regarded as a supply service but the changes that are being requested would mean that pharmacists would be added to the list of recognised health care providers (which

includes physicians, nurse practitioners, dentists, etc) as well as providing reimbursement for medication management services to all patients.

Assessing a patient's health status, formulating a treatment plan, selecting, initiating and modifying medication therapy and performing a medication review are all services that a consensus document of American pharmacy organisations has defined as being part of medication therapy management. At the American Society of Health-System Pharmacists mid-year clinical meeting in Orlando, Florida, on 6 December, T. Mark Woods, ASHP president, said he hoped that legislation would be passed in the next session of congress to make these plans a reality.

NPC resources on simvastatin and repeat dispensing

Two new resources have been published by the National Prescribing Centre: one examines over-the-counter simvastatin and the other tackles repeat dispensing.

The simvastatin document covers the place of OTC simvastatin in local policies to reduce the impact of cardiovascular disease. It points out that, along with the new community pharmacy and GP contracts, the availability of OTC simvastatin provides an opportunity to co-ordinate a number of approaches to cut heart disease rates.

The other document, "Dispensing with repeats", examines the benefits of repeat dispensing and how it can be implemented. It includes key messages and examples of practice from the pathfinder primary care trusts where repeat dispensing was piloted.

All NPC resources are available on the centre's website (www.npc.co.uk).

New partnership set up between hospitals and a single wholesaler

A confederation of seven NHS trusts has entered a public-private partnership with a pharmaceutical wholesaler to increase its procurement efficiency.

Avon, Gloucestershire and Wiltshire Supply Management Confederation conducted a 12-month competitive tendering process before appointing AAH Pharmaceuticals to manage its supply chain.

The idea is that AAH will simplify the procurement process, make it more efficient and minimise stock levels in hospitals. AAH says that the partnership is the first of its kind in the UK.

The seven trusts in the confederation are Gloucestershire Hospitals NHS Foundation Trust, North Bristol NHS Trust, Royal United Hospital Bath NHS Trust, Salisbury Healthcare NHS Trust, Swindon and Marlborough NHS Trust, United Bristol Healthcare Trust and Weston Area Health Trust.

Dendritic vaccine may control HIV progression

Scientists have produced a vaccine that may limit replication of the HIV-1 virus and thus prevent progression of the disease.

They developed a vaccine consisting of dendritic cells from each patient's own immune system loaded with an inactivated form of HIV-1. This was injected into 18 HIV-positive patients who had been recorded as having stable levels of the virus in their blood for the previous six months.

The vaccine was found to induce an HIV-1 specific T-cell response associated with sustained viral suppression and, in addition, the amount of the virus in the patients' plasma was found to decline.

Virus levels decreased by an average of 80 per cent over the first 112 days after the vac-

Levels of HIV-1 virus cells in the blood were reduced by the vaccine

ination. Eight patients demonstrated prolonged suppression of viral load of more than 90 per cent for at least one year.

Furthermore, the scientists were able to identify specific components of the immune response that are needed to contain the virus, a finding that may be useful for future research.

The scientists acknowledge the need for a randomised trial with a control arm, but say that a vaccine capable of controlling viral replication in this disease would not only allow patients to live without daily antiretroviral drugs, but would also minimise their risk of transmitting the virus to healthy people.

The paper appeared in an advance online publication of *Nature Medicine* on 28 November (www.nature.com).

Scott Camazine/CDC/SPL

Antipsychotics may treat viral brain disease

Immuno-compromised patients may benefit from treatment with antipsychotic drugs if they are vulnerable to the effects of a potentially fatal nervous system disorder, cell culture experiments have suggested (*Science* 2004;306:1380).

US researchers found that serotonin receptor antagonists inhibited infection of human glial cells by the human polyomavirus, JCV, which causes the fatal demyelinating disease progressive multifocal leukoencephalopathy (PML).

The incidence of PML has increased 50-fold since 1979 and now affects 1 in 200,000 people. There is, at present, no effective treatment.

The researchers hypothesised that JCV uses either dopamine receptors or serotonin receptors to infect glial cells. They found that serotonin, serotonin receptor antagonists and antibodies directed at serotonin receptors inhibited infection. The authors therefore suggest that serotonin receptor antagonists may offer an effective treatment for PML.

Chocolate ingredient is an effective cough suppressant

Theobromine, an ingredient found in chocolate, has been found to be an effective cough suppressant.

Researchers from Imperial College London tested the compound in a placebo-controlled study and conclude that it is "a novel and promising treatment, which may form the basis for a new class of antitussive drugs".

They found that theobromine, a methylxanthine derivative present in cocoa, suppressed capsaicin-induced cough in human volunteers with no adverse effects. However, they say that further research will be necessary to determine whether theobromine will be effective in patients with chronic persistent cough.

As well as the placebo-controlled trial, the researchers looked at the effect of theobromine on guinea pig and human nerve preparations *in vitro*. They say that, taken together, the findings suggest theobromine's antitussive action is a result of direct inhibition of sensory nerve activation, rather than a centrally mediated mechanism (*Federation of American Societies for Experimental Biology Journal*, published online 17 November 2004).

Molecule regulating blood oxygen is identified

Researchers have identified a molecule responsible for regulating the levels of oxygen in the blood by producing different levels of carbon monoxide and triggering increased breathing rates when needed.

Calcium-sensitive potassium channels are known to regulate oxygen levels in several mammalian tissues and in the carotid body these channels modulate respiratory control.

Researchers have now found that an enzyme called haemeoxygenase-2 forms part of this channel complex and is responsible for oxygen-sensing and controlling breathing rates during oxygen deprivation.

Under normal conditions haemeoxygenase-2 uses oxygen to generate carbon monoxide. The researchers found that under low oxygen conditions haemeoxygenase-2 produces less carbon monoxide, inhibiting the channel cells and triggering a cascade of signals resulting in an increase in breathing rate.

Professor Kemp, lead researcher of the study, said: "[This discovery] will certainly lead to the development of new therapeutic strategies aimed at maximising oxygen delivery when and where it is needed most."

The paper will appear in the 17 December edition of *Science*.

Monoclonal antibody reduces relapse in multiple sclerosis

A new drug undergoing review for approval as a treatment for multiple sclerosis (*PJ*, 11 January, 2003, p44) has been shown to be effective in reducing MS relapse rates, the companies developing the drug have announced.

Natalizumab (Antegren) is a humanized monoclonal antibody thought to work by inhibiting adhesion molecules on the surface of immune cells, preventing the cells from migrating into the brain where they can potentially damage nerve fibres.

One year data from the phase III AFFIRM (Antegren safety and efficacy in relapsing-remitting MS) study, a two-year trial involving 942 patients, showed that natalizumab reduced MS relapse rate by 66 per cent, compared to placebo.

Natalizumab, being jointly developed by Biogen Idec and Elan, was approved by the US Food and Drug Administration this week and is expected to be available in the UK towards the end of next year.

News in brief

Protein can mend hearts

A protein found to promote survival of mice heart muscle cells could be used to treat the damage caused by a heart attack. In mice treated after myocardial infarction with thymosin β 4, a peptide important for cell migration and survival in the embryonic heart, more heart tissue survived and the muscle was better able to contract and pump blood than in those animals treated with a placebo (*Nature* 2004;432:456).