Researchers at Cambridge University in the UK have developed an easy-to-use, rapid and inexpensive dipstick test for the diagnosis of trachoma, an eye disease caused by the bacteria *Chlamydia trachomatis*, which is responsible for more than a million cases of blindness in developing countries.

Potentially sight-saving dipstick developed for rapid testing of trachoma

A research team led by Helen Lee at Cambridge University (UK) have developed a rapid, easy-to-use, inexpensive dipstick method of testing for trachoma, which could have sight-saving implications in developing countries. Trachoma is caused by the *Chlamydia trachomatis* bacteria and results in an infection that forces the eyelid to fold inwards, causing the lashes to leave scars on the cornea. The disease can be treated effectively using a single dose of azithromycin, however, early identification is essential.

A trial carried out by researchers in the Mount Kilimanjaro region of Tanzania demonstrated that the assay was twice as effective at detecting trachoma than traditional methods. In addition, local healthcare workers were trained in the use of the testing stick in less than an hour and test results were developed on-site in areas without electricity or running water, which adds additional value to the testing method, since in Africa, there is only one ophthalmologist per million inhabitants.

It is thought that approximately 1.3 million women and children have suffered blindness as a result of trachoma in Africa and Asia, in addition to the 7 million who suffer from serious visual difficulties. It has been estimated by the WHO that there are 84 million people across 55 countries who require treatment for the disease.

"...at present, the amount of azithromycin pledged by the manufacturer, Pfizer, will not be sufficient to treat everyone living in endemic communities. Yet, much of the drug is wasted in treating communities which no longer need it."

Claude-Edouard Michel who works with Dr Lee at the Diagnostics Development Unit in Cambridge commented on the results of the trial that "We have shown this test can work in the most difficult circumstances without even the most basic of laboratory equipment." Prof. Mabey of the London School of Hygiene and Tropical Medicine added that "The test is an important advance in the fight against trachoma. At present, the amount of azithromycin pledged by the manufacturer, Pfizer, will not be sufficient to treat everyone living in endemic communities. Yet, much of the drug is wasted in treating communities which no longer need it." He continued that "The new test will enable programme managers to find out for themselves which communities still harbour the infection and thus to focus treatment on the communities which really need it."

The news was supported further by Paul Courtright, co-Director of the Kilimanjaro Centre for Community Ophthalmology at Tumaini University in Moshi (Tanzania), who comment that "The findings from this study will likely lead to a major re-think on how we conduct trachoma control in Africa. It will help us become more targeted in our approach – saving time and money."

The WHO has launched a programfor the eradication of trachoma by 2020 and is currently focusing its efforts on surgery, antibiotics, facial cleanliness and environmental improvements to achieve that goal. Trachoma infection is spread by the Bazaar fly in areas of poor hygiene or drought. The WHO currently recommend treatment with a single dose of azithromycin to all members in the community once trachoma is identified, for a 3-year period or until the prevalence is 5% or less, which can result in unnecessary dosing of the drug. The Alliance for the Global Elimination of Blinding Trachoma by the year 2020 (GET 2020) is collaborating with the WHO in this project.

University of Arizona scientists awarded US$1.8 million grant to fund research into glaucoma

Daniel Stamer and Ronald Heimark, researchers from the University of Arizona (AZ, USA), have been awarded a 5-year, US$1.8 million grant by the NIH to develop a more effective treatment for the eye disease, glaucoma. In a press release issued following the grant announcement, Stamer revealed that "We came up with a cutting-edge approach for the treatment of glaucoma that had never been investigated." Heimark continued that "Our drug has the potential to help delay or replace glaucoma surgery, and to help prevent glaucoma from progressing to blindness."

Glaucoma, which is caused by a build-up of fluid pressure, is the leading cause of preventable blindness worldwide. In fact, it is estimated that at least 3 milion Americans and 70 million living worldwide are afflicted with the disease. The new drug in development by Stamer and Heimark claims to drain 80% of the fluid that results in the build-up of pressure, compared with drugs currently on the market that are capable of draining only approximately 20% of fluid.

A patent has also been licensed on the new drug by Advanced Glaucoma Technologies Inc., who are working on its development with the team at the University of Arizona.

Priority Paper Alerts

Atypical lymphoproliferation progressing into B-cell lymphoma in rheumatoid arthritis treated with different biological agents: clinical course and molecular characterization

Quartuccio L, De Re V, Fabris M. *Haematologica* 91, 691–694 (2006).

Describes a case of treatment of rheumatoid arthritis (RA) associated with a lymphoproliferative disorder (LPD) that developed after methotrexate and cyclosporin A therapy. Following antitumor necrosis factor-α therapy (for replapsing arthritis) an aggressive B-cell non-Hodgkin's lymphoma developed. The article highlights different safety profiles of a number of biological treatments in patients with RA and an associated B-cell nonmalignant LPD.

Outcome of treatment for congenital toxoplasmosis, 1981–2004: the National Collaborative Chicago-Based, Congenital Toxoplasmosis Study.

McLeod R, Boyer K, Karrison T *et al.* Toxoplasmosis Study Group. *Clin. Infect. Dis.* 42(10), 1383–1394 (2006).

Report of a long-term follow up of a group of 120 infants with congenital toxoplasmosis who were treated in the first year of life with the drugs pyrimethamine and sulfadiazine. Children were evaluated at birth and subsequent, predetermined intervals, to evaluate end points: motor abnormalities, cognitive outcome, vision impairment, formation of new eye lesions and hearing loss. Results showed generally favorable outcomes (although not for all children), which reiterate the importance of diagnosis and treatment of infants with the disease.

Effects of early treatment with statins on short-term clinical outcomes in acute coronary syndromes: a meta-analysis of randomized controlled trials.

Briel M, Schwartz GG, Thompson PL *et al*. *JAMA* 295(17), 2046–2056 (2006).

Evaluates the outcomes of patients in randomized, controlled trials on early statin therapy after the onset of acute coronary syndromes (ACSs) compared with placebo or the normal course of care over the short term (1 and 4 months) following ACS. It was determined that there is no reduction in death, myocardial infarction or stroke for up to 4 months, associated with the initiation of statin therapy within 14 days of the onset of ACS.

US FDA approves Remicade® for wider use

The US FDA has approved Johnson & Johnson's TNF-α blocker, Remicade® (infliximab), for use in a wider range of diseases, including the treatment of Crohn's disease in children. Following news of the approval, Steven Galson, Director of the FDA's Center for Drug Evaluation and Research commented that "Remicade is not a cure, but it provides a much-needed option for reducing the symptoms and inducing and maintaining disease remission in children who have no other safe and effective therapy." He continued that the US FDA "believe that the potential benefits of this product outweigh the risks that are known and have been carefully evaluated."

A randomized trial was carried out in 112 patients between the ages of 6–17 years with moderate to severely active Crohn's disease who had an inadequate response to conventional therapies, to assess the safety and efficacy of the drug. Results showed that no new safety concerns, not already noted on existing product labeling, were observed in the trial and, in general, the safety profile observed in the pediatric population appears to be similar to that noted in adults.

Side-effects observed in adults are typical of TNF-α blockers and include an increased risk of serious infections and malignancies, such as sepsis and pneumonia. These risks are currently noted on the labeling of all TNF-α blockers.

Gardasil® voted safe and effective by US FDA

The US FDA has unanimously voted the cervical cancer vaccine, Gardasil, as safe and effective. This result could lead to the drug going on sale within the coming months. The trial demonstrated that the drug was safe and 100% effective in preventing cervical cancer, which currently kills approximately 290,000 women/year worldwide. It is hoped that this new vaccine against the disease could cut approximately two thirds of deaths caused by the human papillimoavirus (HPV) (191,000 lives) worldwide each year.

It is now expected that the FDA will approve the drug within the next month, making it available for sale in the USA within 3 months. If approved, the vaccine will be administered to children in 3 doses over a 6-month period before they become sexually active. Ian Frazer who discovered the drug, noted (of the vaccine) that "in several clinical trials done by several different groups [Gardasil] has proven 100% effective in preventing not only the infection that causes cervical cancer, but also the precancer lesions of the disease that needs to be treated."

He further noted that "with data like that, plus the excellent safety record the vaccine has demonstrated over the 25,000 women that have been given it now, it would be surprising if they had not recommended it."

Gardasil was discovered by the Australian Research Scientist, Ian Frazer, and developed by Merck in the USA and biotech company CSL, who will produce the drug under licence for the Australian market.

New drugs show potential for treatment of rheumatoid arthritis

The non-Hodgkin's lymphoma drug rituximab has recently been approved for the treatment of rheumatoid arthritis (RA) by the US FDA. Now a new study, published in *Arthritis and Rheumatism*, has confirmed its efficacy in 'hard-to-treat' patients. Rituximab selectively depletes B cells, unlike most existing treatments, which target inflammatory T-cells.

A total of 465 patients with treatment-resistance RA were randomized to receive an existing arthritis drug, methotrexate, along with either 1000 or 500 mg of rituximab or placebo. Rituximab or placebo were administered 2 weeks apart by intravenous infusion. Every 4 weeks, for 6 months, the patients were given a standard 28-joint assessment.

Approximately 55% of these difficult-to-treat patients showed improvement after rituximab treatment, compared with just 28% of the placebo group. There was no difference in efficacy between the high and low doses of rituximab. Following these findings "longer trials are planned to optimize the use of this very interesting drug," according to lead researcher Dr Paul Emery.

Recent studies have demonstrated the potential benefits of two drugs, currently used to treat cancer and osteoporosis, in rheumatoid arthritis.

Another study by the same group, from Chapel Allerton Hospital (Leeds, UK), showed promising initial results for the osteoporosis drug zoledronic acid in RA. This small, proof-of-concept trial included 39 patients with early RA who received either placebo or zoledronic acid along with methotrexate. Joint erosion was assessed by magnetic resonance imaging (MRI) scans.

After 26 weeks, patients receiving zoledronic acid in addition to methotrexate demonstrated a 61% reduction in average erosion at the hand and wrist compared with the placebo group. The mean increase in the number of affected bones was also lower in the group treated with zoledronic acid versus those who received placebo (0.3 vs 1.4, respectively). Zoledronic acid was well tolerated, with a similar side-effect profile to placebo.

Dr Emery and colleagues conclude that these results "suggest that zoledronic acid may be a useful addition to current therapy for RA."

Gene linked to Type 1 diabetes discovered

A genome-wide search by researchers at the Cambridge Institute for Medical Research (UK) has revealed a gene variation linked to the risk of Type 1 diabetes. Few genes have been associated with Type 1 diabetes, which is caused by a failure of insulin production in the pancreas.

The affected gene encodes a protein, interferon-induced helicase (IFIH1), involved in the immune response to viral infection. This supports the hypothesis that Type 1 diabetes is caused by an abnormal response to infection by a virus, destroying insulin-producing cells. In light of their findings, the researchers feel that this potential mechanism deserves further investigation.

The link between this gene variant and the risk of Type 1 diabetes was confirmed by an analysis of almost 1800 families affected by Type 1 diabetes. These statistics are 'compelling', state Dr John A Todd and colleagues in their report, published recently in *Nature Genetics***.**

A simple blood test could point to outcome after brain injury

Serum magnesium levels may be related to outcome after traumatic brain injury (TBI), according to researchers at the University of Pittsburgh Brain Trauma Research Center (PA, USA). The study included 83 patients with TBI, of whom 35 had normal serum magnesium levels and 48 had low (below 1.3 mg/dl) magnesium levels. The two groups were similar in all other prognostic factors (e.g., age, severity of coma). The results were announced during the 74th Annual Meeting of the American Association of Neurological Surgeons in San Francisco (CA, USA).

After 6 months, patients with low magnesium levels had poorer outcomes, as measured by the Glasgow Outcome Scale, than those with normal serum magnesium. "The simplest interpretation of this data would support replenishing serum magnesium levels as soon as possible in TBI patients. However, the utility of this approach needs to be proven," cautioned study author Martina Stippler.

"The simplest interpretation of this data would support replenishing serum magnesium levels as soon as possible in TBI patients."

The link between blood magnesium levels and various factors associated with recovery after brain injury, such as neurotoxicity, oxidative stress, protein synthesis and energy metabolism, has been shown previously in animal models. However, it is not yet clear whether magnesium has a protective effect in the brain following trauma or whether low magnesium levels are a marker of more serious brain injury.

If you are interested in this bulletin, see also:
Alterations of blood IL-8, TGF-β1 and nitric oxide levels in relation to blood cells in patients with acute brain injury. *Therapy* 3(3), 413–419 (2006).