

# EDITORIALS

Editorials are usually commissioned. We are, however, happy to consider and peer review unsolicited editorials

See <http://resources.bmj.com/bmj/authors/types-of-article/editorials> for more details

## Airborne exposure to preservative methylisothiazolinone

Causes severe allergic reactions particularly with paint

**Michael Dyrgaard Lundov** senior researcher  
michael.dyrgaard.lundov@regionh.dk

**Claus Zachariae** chairman

**Torkil Menné** professor

**Jeanne Duus Johansen** professor, National Allergy  
Research Centre, Department of Dermato-Allergology,  
Gentofte Hospital, DK-2820 Gentofte, Denmark

Chemicals usually cause allergic reactions through direct contact with the skin. For example, a person may develop an allergic reaction from the use of cosmetic products containing allergenic fragrance ingredients or preservatives. The result is allergic contact dermatitis—a type IV immune reaction. Until recently, airborne exposure to allergens—for example, plant allergens such as compositae or industrial chemicals such as isocyanates—was a well known but rare cause of allergic skin reaction. The introduction of a new preservative, methylisothiazolinone, which is now extensively used in products such as cosmetics and paints, has changed this.<sup>1</sup>

An alarming increase in allergic skin reactions after airborne exposure to methylisothiazolinone has been seen in several countries. In Denmark, allergic reactions to this compound in patients with eczema rose from 1.4% in 2009 to 3.1% in 2011 (55 positive reactions to methylisothiazolinone in 2470 patch tested patients; data not yet published). Half of the patients had been exposed to methylisothiazolinone through cosmetic products and more than a third through paint. Three quarters of the patients with exposure through paint presented

with airborne allergic dermatitis, sometimes accompanied by asthma, after painting their homes or staying or working in newly painted rooms. The presenting features were dermatitis at skin sites not covered by clothes, such as the face and neck (airborne contact dermatitis), sometimes accompanied by asthma symptoms, or systemic contact allergic reactions with rash in the popliteal and antecubital fossa and flare-up reactions, such as hand eczema.

Early reports on methylisothiazolinone contact allergy show a one year prevalence of 0.9–1.8% in patch tested patients.<sup>2–4</sup> Exposure was mainly from cosmetics (such as wet wipes) and paint.<sup>3</sup> Recent publications have shown that methylisothiazolinone emissions from paint can elicit systemic allergic reactions that require hospital admission and can even sensitise healthy non-allergic people.<sup>5–6</sup> Moreover, methylisothiazolinone exposure was recently noted to be one of the most common causes of occupational contact dermatitis in painters.<sup>7</sup>

In an ongoing study, we found that 17 different wall paints purchased in Denmark all contained methylisothiazolinone in concentrations between 10 and 300 parts per million (ppm).<sup>8</sup> In an experimental situation, emission of methylisothiazolinone from painted glass plates was measurable for at least 26 days.<sup>9</sup> The emission of methylisothiazolinone from painted gypsum boards in a closed chamber is currently being studied.

Methylisothiazolinone has been used in a 1:3 combination with methylchloroisothiazolinone since the early 1980s. Since then, this combination has been one of the most common causes of contact allergy to preservatives. It has been regulated several times and is now limited to 15 ppm in cosmetics. In 2000, methylisothiazolinone alone, which is claimed not to be as potent a sensitiser as methylchloroisothiazolinone, with an estimated EC3 value of 1.9% (which corresponds to a moderate sensitiser),<sup>10</sup> was released on the market. It was first used in occupational products, such as paint and lacquers, where the introduction of new chemicals is less strictly regulated. The first cases of methylisothiazolinone contact allergy caused by occupational exposure were published in 2004.<sup>11</sup>

**It is unacceptable that a commonly used chemical should be allowed to pose a threat to human health through airborne exposure in many environments**

In 2005, methylisothiazolinone was permitted in cosmetics in both the European Union and the United States at a maximum concentration of 100 ppm—more than 25 times greater than that allowed in the methylchloroisothiazolinone-methylisothiazolinone combination.

The increase in methylisothiazolinone contact allergy is similar to that seen for methyl dibromoglutaronitrile in a 2002 study,<sup>12</sup> which led to methyl dibromoglutaronitrile being banned in cosmetic products. However, the increase in methylisothiazolinone contact allergy seems to be more rapid, and the severe reactions associated with airborne exposure are alarming. Currently, there are no legal restrictions or labelling demands for methylisothiazolinone in products other than cosmetics and household cleaning products, making it difficult for consumers and workers to consciously avoid exposure to methylisothiazolinone. A major concern is that products containing this preservative are now being used extensively in public, domestic, and occupational settings, increasing overall exposure and thereby the risk of developing dermatitis.

It is unacceptable that a commonly used chemical should be allowed to pose a threat to human health through airborne exposure in many environments. We suggest that the existing risk assessments for cosmetic and industrial products that contain methylisothiazolinone should be re-evaluated. In addition, regulators should consider immediately lowering the allowed concentration of this compound in all types of products until a safe concentration is established or methylisothiazolinone is completely banned from all consumer and occupational products.

Competing interests: None declared.

Provenance and peer review: Not commissioned; externally peer reviewed.

References are in the version on [bmj.com](http://bmj.com).

Cite this as: *BMJ* 2012;345:e8221



bmj.com

► Clinical review: Managing retinal vein occlusion  
(*BMJ* 2012;344:e499)

**Diagnosis of a comorbid disease, such as hypertension, is commonly made at the time of diagnosis of retinal vein occlusion**

## Branch retinal vein occlusion

Association with risk factors for arterial disease confirms current theory of pathogenesis

**Victor Chong** head of department, Oxford Eye Hospital, Oxford University Hospitals, Oxford OX3 9DU, UK  
victor.chong@eye.ox.ac.uk

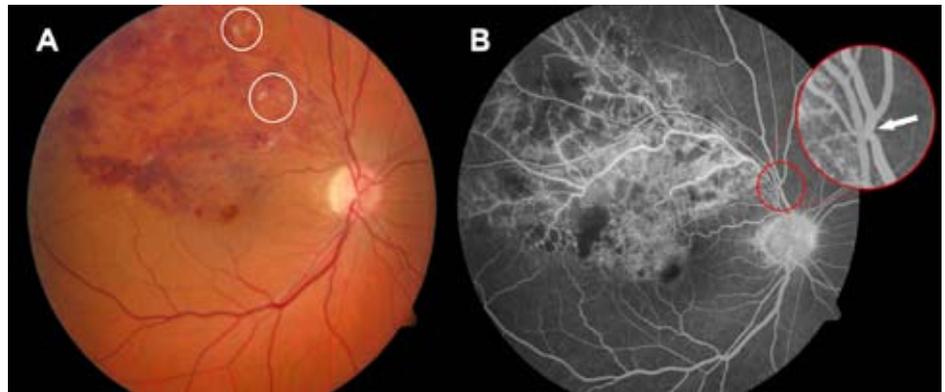
Retinal vein occlusion is one of the most common causes of sudden painless unilateral loss of vision. It is the second most common retinal vascular disease after diabetic retinopathy.<sup>1</sup> Occlusion may occur in the central retinal vein or branch retinal vein.

Although specific ocular risk factors for central retinal vein occlusion include increased intraocular pressure and anatomical variation of the optic disc, systemic risk factors occur in patients with both types of occlusion.<sup>2-3</sup> In a linked case-control study based on data from Danish national registries, Bertelsen and colleagues investigated comorbidity in patients with branch retinal vein occlusion.<sup>4</sup> They were wise to study only patients with branch retinal vein occlusion because patients with central retinal vein occlusion may have ocular risk factors, so combining patients with both types of occlusion in one study of systemic risk factors could bias the findings.

Patients with retinal vein occlusion usually present with sudden loss of vision in one eye, which tends to get worse over the first few days. Some patients notice the loss of vision by chance when they cover one eye, but many have blurred vision when they wake up in the morning. The diagnosis is relatively straightforward. Funduscopy shows typical widespread retinal haemorrhages, in the whole fundus in central retinal vein occlusion or just a section of the retina in patients with branch retinal vein occlusion.

Loss of vision is usually secondary to macular oedema. Two treatments are licensed in Europe: dexamethasone implants and ranibizumab, with dexamethasone implants being approved by the National Institute for Health and Clinical Excellence in the United Kingdom. Aflibercept was recently approved by the Food and Drug Administration for treatment of central retinal vein occlusion in the United States. All are intravitreal injections that are generally well tolerated by patients.<sup>1</sup>

The mechanism of occlusion of the retinal vein is generally thought to be secondary to compression—particularly in branch retinal vein occlusion—by a thickened atherosclerotic



**Branch retinal vein compressed by thickened artery**

retinal artery. The retinal arteries and veins run in close proximity to each other and cross over one another at several points in the retina. It is at these arteriovenous junctions that an artery with a thickened wall can displace the retinal vein or even compress the vein—arteriovenous nipping (or nicking)—a sign commonly seen in patients with hypertension. Compression of a retinal vein may disturb venous blood flow, leading to turbulence and endothelial damage by shear stress, and eventually to occlusion.

Bertelsen and colleagues chose cases of branch retinal vein occlusion from Danish secondary referral centres and confirmed each one by reviewing photographs of the fundus, which they rightly consider a reliable way to confirm the diagnosis.<sup>4</sup> Using the national registry data they compared the 1168 cases with 116 800 randomly selected controls without the disease. One of the main criticisms of this paper is that the cases and controls were not matched for age—the controls were markedly younger, so the authors performed a statistical correction. Nonetheless, the study confirmed previous findings that hypertension and diabetes are more common in patients with branch retinal vein occlusion. The authors also found that peripheral artery disease, but not congestive heart failure or cerebrovascular disease, was more common in these patients. This is consistent with the hypothesis that systemic arterial diseases play an important role in the pathogenesis of this condition.

A somewhat surprising finding was that, after diagnosis, patients who did not already have

these systemic risk factors were at higher risk of developing hypertension, diabetes, peripheral artery disease, congestive heart failure, and cerebrovascular disease. Patients with branch retinal vein occlusion were probably diagnosed as having these comorbidities at the same time or shortly after the diagnosis of branch retinal vein occlusion, which would also sit well with the current theory of pathogenesis.

Diagnosis of a comorbid disease, such as hypertension, is commonly made at the time of diagnosis of retinal vein occlusion. Primary care doctors are advised to investigate systemic risk factors when the diagnosis of branch retinal vein occlusion is made.<sup>1</sup> Future studies should investigate the timing of the development of arteriopathic comorbidities discovered after the diagnosis of branch retinal vein occlusion. If comorbidities are diagnosed at that point or soon after, current management strategies, which include treatment of risk factors for arterial disease that are currently present, are acceptable. However, if comorbidities develop some years after the diagnosis of branch retinal vein occlusion in patients without systemic risk factors at the time of that diagnosis, it might be necessary to screen patients for risk factors of arterial disease for a longer period of time after diagnosis.

Competing interests: None declared.

Provenance and peer review: Commissioned; not externally peer reviewed.

References are in the version on bmj.com.

Cite this as: *BMJ* 2012;345:e8373

► RESEARCH, p 17

- ▶ Editorial: Food price crises and health (*BMJ* 2011;342:d2474)
- ▶ Analysis: Food policies for healthy populations and healthy economies (*BMJ* 2012;344:e2801)
- ▶ Analysis: Potential causes and health effects of rising global food prices (*BMJ* 2009;339:b2403)
- ▶ Views and reviews: India's food bill will not provide the security it claims (*BMJ* 2012;344:e3194)

## The right to food security

Communities must push back against global policy decisions that fuel Third World hunger

**Veena Shatrugna** formerly deputy director, National Institute of Nutrition, Flat 504 Divya Enclave, Vijayapuri Colony, Tamaka, Secunderabad 500017, India  
veenashatrugna@yahoo.com

**R Srivatsan** senior fellow, Anveshi Research Centre for Women's Studies, Amberpet, Hyderabad 500013, India

The report from the Right to Food and Nutrition Watch published during October 2012 considered the effects of globalised food policies on populations in the Third World.<sup>1</sup> The authors of the report considered food security in light of social determinants of nutrition, such as food availability, agricultural policy, land transactions, cropping patterns, and agricultural finance. The report focused on the lack of accountability of large food producers that also own vast tracts of land to the people who face hunger and who have a right to food. Their damning indictment is that “the right to food of people around the planet has primacy over the need to fuel cars and economies in the European Union or North America.”

The report included a review of the progress of the Committee on World Food Security (an international body set up by the UN) after it was reformed in 2009 to include people's organisations. The report stressed the importance of keeping the right to food as a benchmark in policy decisions. The World Trade Organization routinely takes major policy decisions that affect communities' right to food without due consideration. Other offenders include international investment groups that negotiate the terms of bilateral trade agreements, public-private partnerships that promote directly delivered medicalised nutritional intervention, and those that engage in speculative trading in food. The report reviewed finance capital in agribusiness and outlined the devastating effects on poverty of speculative trading in food. Speculation on food prices has resulted in dangerously volatile food prices since 2007. Agribusiness trades through individual contracts and with little market transparency. The source of finance is surplus funds in the West, but speculation wreaks havoc and impoverishment in the Third World.

The report also presents several case studies that are eye openers to what happens on the ground. They illustrate, for example, how coercive land acquisition (grabbing)—a historical legacy of colonialism in the Arab Spring countries—and allocation of prime agricultural land to non-local



Land diverted to biofuel crop in Indonesia

industry cause food crises and impoverishment in agricultural communities. The increasing diversion of agricultural land away from food farming and to the cultivation of biofuels needed by Western countries is another major problem currently contributing to hunger in Africa. Widespread economic havoc has been caused in Mexico under the unfavourable North American Free Trade Agreement, which sees Mexico trading agricultural commodities with the United States.

India has had enormous growth in gross domestic product with no evidence of a trickle down effect. In 2006 it was estimated that 51.5% of Indian children were stunted and 54.9% were underweight. About 34.6% of adults reportedly had a body mass index of less than 18.5.<sup>2</sup> It seems that there has been little recent change.

India's long term food policies have resulted in an epidemic of stunting and decreased muscle mass in the children of poor families. Indian national policy has for decades emphasised cheap cereals as the major source of energy for its population. In a 1968 publication, nutrition experts suggested that a mixture of cheap foods like cereals, pulses, and vegetables could provide a mixture of amino acids that was very nearly as good as if animal proteins were consumed.<sup>3</sup> This particular statement was reproduced in the 1971 edition of the Indian National Institute of Nutrition's report *Nutritive Value of Indian Foods* and every reprint until the latest in 2011. Furthermore, it has influenced policies on food and wages, including the calculation and classification of the “poverty line.”

In 1970, people were regarded as being above the poverty line if they could afford to consume 10042 kJ (2400 kcal) daily from the cheapest food

source. Minimum wages were then calculated to provide this level of intake for a family of five on the assumption that they would consume cheap cereals. The famous “myth of protein gap,” based on an observation in 1971 that undernourished children (1670-2090 kJ daily deficit) could consume adequate protein (20 g/day) from cereal if only “they ate more of their usual foods,” changed the way the diets of poor adults and children were regarded.<sup>4</sup> Promotion of a cereal-pulse vegetarian diet effectively removed animal proteins from Indian diets.<sup>3</sup> Even consumption of pulses diminished over time. The more affluent vegetarians, a minority, consumed adequate daily protein requirements through sources such as milk and almonds.

In addition to widespread malnutrition and stunting, which underpins negative metabolic consequences in adulthood, more than 70% of women and children in India have anaemia and deficiencies in intakes of most vitamins and minerals.<sup>2</sup> Against this background of chronic poor nutrition, more food shortages have worsened malnutrition and hunger in the Indian population. A more recent concern in India, however, is the complex association between adult onset obesity and food insecurity. Accumulating evidence suggests that, although severe food insecurity leads to wasting, mild to moderate food insecurity is associated with obesity.<sup>5</sup> This hunger induced morbidity pattern will continue to plague India for decades.

The Right to Food and Nutrition Watch 2012 report concludes by discussing how hungry people can regain control over those decisions that affect their food and nutritional situation. The authors highlight several successes, including the first international instrument that applied a human rights approach to agree on tenure of natural resources—the new Guidelines on Responsible Governance on Tenure of Land, Fisheries and Forests. These guidelines were adopted in May 2012 by the Committee on World Food Security after an inclusive and participatory process. They urge communities to occupy the newly created political spaces for inclusive decision making on food and nutrition.

Competing interests: None declared.

Provenance and peer review: Commissioned; not externally peer reviewed.

References are in the version on [bmj.com](http://bmj.com).

Cite this as: *BMJ* 2012;345:e8273

bmj.com

🕒 Clinical review: Management of difficult and severe eczema in childhood (*BMJ* 2012;345:e4770)

🕒 Clinical review: Atopic and non-atopic eczema (*BMJ* 2006;332:584)

## Avoiding hand eczema in healthcare workers

Good evidence that individualised education can lead to secondary prevention

**Kim Thomas** associate professor, Centre of Evidence Based Dermatology, University of Nottingham, Nottingham NG7 2NR, UK kim.thomas@nottingham.ac.uk

**John English** consultant dermatologist, Dermatology Department, Nottingham University Hospitals NHS Trust, Nottingham, UK

Occupational hand eczema in healthcare workers is common worldwide and an important public health concern.<sup>1</sup> In our institution, and probably across the whole of the healthcare sector, the rise in incidence and prevalence has mirrored the campaigns to reduce hospital acquired infections.<sup>2</sup> It is perhaps not surprising that irritant contact dermatitis occurs in people who wash their hands as often as 50-60 times a shift, and because damaged skin often carries a higher bacterial load,<sup>3</sup> this also has implications for infection control. Fortunately, this problem is potentially amenable to prevention strategies.

In a linked research paper, Ibler and colleagues evaluate the usefulness of a structured skin care intervention to prevent hand eczema among healthcare workers in Denmark.<sup>4</sup> Primary prevention generally involves the introduction of a skin protection programme,<sup>5</sup> which includes reducing exposure to irritants, regularly using fragrance-free and lipid-rich moisturisers, and wearing occlusive gloves for the shortest time possible. Educational based programmes have been recommended as a way to get this message across to healthcare workers.<sup>6</sup>

The linked randomised controlled trial evaluated a secondary prevention programme: it compared an individualised education programme with standard care in 255 healthcare workers with self reported hand eczema. The trial was well designed, thoroughly executed, and clearly reported. It provides compelling evidence to support the effectiveness of such an approach in the secondary prevention of hand eczema in healthcare workers over a five month period.

To date, research has generally focused on the primary prevention of occupational hand eczema (reducing the incidence of the disease), rather than on secondary prevention (minimising progression of the disease in people who already have some degree of hand eczema). A Cochrane review on interventions for the primary prevention of occupational irritant hand



MARK THOMAS/SPL

**It is perhaps not surprising that irritant contact dermatitis occurs in people who wash their hands as often as 50-60 times a shift**

dermatitis found four relevant clinical trials, including 895 participants from a variety of work settings (print and dye workers, metal workers, cleaners, kitchen workers, and hairdressers).<sup>7</sup> These trials showed no clear evidence to support the use of barrier creams or after work cream for primary prevention.

A more recent systematic review of the management of occupational dermatitis specifically in healthcare workers found two studies by the same group that explored the value of educational interventions for the primary prevention of hand eczema in workers at old people's homes and student auxiliary nurses.<sup>6, 8, 9</sup> These studies were excluded from the Cochrane review because workers who already had hand eczema were included alongside those who were healthy at the start of the study, making an assessment of the efficacy of the intervention for primary prevention difficult to ascertain.

These two trials suggested potential benefits of education based programmes, but the results were inconclusive owing to limitations in trial design and reporting.

The current study nicely fills the gap in our knowledge of preventive interventions. After patch and skin prick testing for common allergens, people with skin problems received counselling on the interpretation of their test results and instructions on how to care for their skin. This included avoidance of relevant allergens, both at home and at work; how to wash and dry hands; use of disinfectants instead of washing if hands were not visibly dirty; and use of emollients three times a day.

Delivery of the intervention took 20-30 minutes per participant. The content of the education package is in line with current understanding of best preventive skin care for occupational dermatitis.<sup>6</sup> Such an approach is probably generalisable to most healthcare delivery systems; indeed, the authors report that a similar programme has already been implemented in Germany.

Although the current trial provides the best evidence so far to support the benefit of an educational intervention for the secondary prevention of hand dermatitis in healthcare workers, it does not evaluate the economic impact of the intervention. The cost effectiveness of an individualised educational programme such as this is still unknown. Future research could also look at longer term outcomes to see whether the effects are sustained beyond five months. It could also investigate whether such approaches are useful in primary prevention of hand eczema in healthcare workers—a topic recently highlighted as important by the UK National Institute for Health Research Health Technology Assessment Programme.<sup>10</sup> Whether the observed improvements in skin health could reduce cross infection and hospital acquired infections also remains to be seen.

Competing interests: JE has received speaker's fees from Baisilea Pharma, which no longer markets a hand eczema drug.

Provenance and peer review: Commissioned; not externally peer reviewed.

References are in the version on bmj.com.

Cite this as: *BMJ* 2012;345:e8370

🕒 RESEARCH, p 16