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EDITORIALS

Swine flu

Fragile health systems will make surveillance and mitigation a challenge



DAVID DE LA PAZ/LANDOVIPA

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Richard Coker professor of public health, Communicable Diseases Policy Research Group, London School of Hygiene and Tropical Medicine, Faculty of Tropical Medicine, University of Mahidol, Bangkok 10400, Thailand
richard.coker@lshtm.ac.uk

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During March, Mexico saw unusual patterns of acute cases of respiratory infection. On 18 April, a laboratory in the United States reported two human cases of swine flu—the result of a novel reassortment of influenza A strain H1N1 from avian, swine, and human strains—in two children from California. A week later, on 25 April, the World Health Organization declared the swine flu outbreak in North America a “public health emergency of international concern.” This decision, in accordance with the International Health Regulations, means that countries have been asked to step up reporting and surveillance of the deaths and illnesses associated with the disease. On 29 April, the International Health Regulations emergency committee recommended a change from WHO pandemic influenza phase 4 to phase 5. This means that WHO views a pandemic as imminent.

At the time the *BMJ* went to press 21 countries have reported 1124 cases of swine flu. Mexico has reported 590 cases and 25 deaths, and the United States has reported 286 cases with one death. No deaths have been reported in the remaining 19 countries that have reported cases.

New probable and confirmed cases are emerging daily. Given the widespread presence of the virus across many countries containment is probably not feasible, and efforts need to focus increasingly on mitigation. Interestingly, almost all cases reported so far outside Mexico have been reported by developed countries with robust surveillance systems. It is unclear whether this is because populations at risk have travelled preferentially from Mexico to those sites, or, more pessimistically, whether cases are now occurring in countries with less well developed surveillance systems and not coming to international attention. Are we seeing only part of the global picture?

Neither natural immunity from earlier strains of influenza A nor currently available vaccines offer protection against swine flu. This new strain is, at this stage, sensitive to antiviral drugs oseltamivir and zanamivir.¹ However, although many developed countries, including most of Western Europe and the US, have sizeable stockpiles of antiviral drugs, most low and middle income countries have low or non-existent stocks. The rapid response stockpile of three million treatments of oseltamivir, and the two million treatments stockpiled by WHO as regional stockpiles for use in developing countries, are intended principally for rapid containment, and they will not go far to support mitigation efforts. Roche, the manufacturer of oseltamivir, has fulfilled orders amounting to 220 million treatment courses to just over 85 countries to date, but this would treat only about 5% of the world's

population (and much less if the drug is used prophylactically). Manufacturing capacity can be readily expanded to produce, over one year, treatment courses for 400 million people, but this is still a fraction of possible global demand.

Since the re-emergence of H5N1 strains of avian influenza and the emergence of severe acute respiratory syndrome—both in Asia in 2003—global, regional, and national public health institutions have been preparing for a pandemic. So, is the world—as the BBC noted in a headline on 27 April—“well prepared”?² Well, not necessarily. Analyses of national strategic plans around the world show that although most countries now have plans, many countries, especially developing countries, will struggle to put them into operation. This is because they have limited health system resources to call on in the event of a pandemic; they have not stockpiled antiviral drugs in anything like the numbers needed for mitigation purposes (and if they had, they might struggle to mobilise them effectively); and they are unlikely to receive an effective vaccine early (if at all), once it is produced in large amounts.³⁻⁸

Responses to pandemic flu are grounded in notions of national sovereignty. Analyses of national plans have highlighted strategic inconsistencies, resulting in the potential for political tension.⁹ One area of confusion is that of border control; evidence shows that border screening is an ineffective means of control, and WHO is resisting calls to issue recommendations for travel restrictions. However, several countries including the UK (and the European Union) have recommended restrictions on travel.

Now world attention is focused on H1N1 swine flu it is easy to forget the threat still posed by H5N1 and other strains of flu. Immunity to H1N1 will not offer protection to H5N1 if that also becomes readily transmissible between humans. As H1N1 spreads to areas where H5N1 is endemic, do we face an even greater challenge—that of reassortment of these two viruses and the threat of another pandemic?

The economic crisis of the past year has shown how interconnected we are, and it has also highlighted challenges that arise when countries whose interests are at variance have to act together for the common global good. If swine flu becomes a pandemic and is associated with high mortality and morbidity, notions of global solidarity may be tested as never before.

See also discussion on doc2doc <http://tinyurl.com/dc6bzf>.

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Prescribing antibiotics for acute cough in primary care

Can be reduced by improving communication and measuring CRP



ANTONIA REEVE/SPL

Acute cough is the most common symptom managed by healthcare services, and it is associated with large personal, societal, and healthcare costs. In the linked randomised cluster controlled trial, Cals and colleagues assess the effects of communication skills training and the use of C reactive protein (CRP) testing on the prescription of antibiotics to patients with lower respiratory tract infection in primary care.¹

The participants were older than 18 years, they had an acute (no more than four weeks' duration) cough considered by the general practitioner to be caused by lower respiratory tract infection, and they had at least one chest symptom or sign and at least one systemic symptom or sign.² The investigators tried to recruit patients with what most clinicians would recognise as acute bronchitis, influenza, acute exacerbations of asthma, and acute exacerbations of chronic pulmonary obstructive disease. They excluded patients who currently or recently needed antibiotics or hospital admission.

The trial used a factorial design, and the units of randomisation were individual general practitioners' practices. Although cluster randomisation aims to prevent the control group from also receiving a group level intervention, such as communication skills training, it is not the preferred design for individual level interventions, such as tests (like CRP) or drugs, because it reduces trial power and introduces the risk of post randomisation selection bias. This occurs when study clinicians' invitations for patients to participate are influenced by the clinicians' knowledge of group allocation. Patients in the intervention and control groups were similar, however, which suggests that selection bias did not occur in this study.

Communication skills training consisted of a two hour training seminar before and after consultations with simulated patients in routine surgeries.² General practitioners were encouraged to: elicit patients' worries and expectations (including the expectation for antibiotics); have a balanced discussion about the benefits and harms of antibiotics; and explain that acute bronchitis is a self limiting condition, that the body's immune system will clear it with time, that its natural course is often longer than four weeks, that adequate fluid and food intake is beneficial, and that activity should be limited. Finally, general practitioners were encouraged to summarise and elicit the

patient's understanding of information and discuss alarm symptoms that should prompt the patient to consult them again. Three quarters of patients in the "communication skills practices" remembered the general practitioner using these skills.

Point of care testing for CRP in primary care varies widely between countries. It is used in around 40% of consultations for respiratory tract infection in Sweden,³ but it is barely used in the United Kingdom. A CRP cut-off point of ≥ 40 mg/l has been shown to be 70% sensitive and 90% specific for community acquired pneumonia in primary care,⁴ but a recent systematic review concluded that CRP could help rule out community acquired pneumonia only if the probability of the patient having this condition is $> 10\%$ (such as in emergency departments).⁵ In Cals and colleagues' trial, the general practitioners were given information about the likelihood of acute bronchitis or community acquired pneumonia with different concentrations of CRP. All patients in the "CRP practices" had their CRP concentrations measured.

About 50% of patients in the control practices were prescribed antibiotics compared with about 25% in the communication skills training practices and the CRP practices. These reductions were maintained when measured after 28 days. Severity and duration of illness and patient satisfaction were similar in all groups. Although the study probably lacks enough power to be certain, the effects seemed to be no greater in patients who received both interventions than in those who received one. The internal validity of the study is high, and the 20 practices (40 general practitioners) were broadly representative of practices and general practitioners in the Netherlands. Also, the reductions in prescribing were greater than those reported in a previous randomised controlled trial where patients were given written information only.⁶

Questions that remain include whether these reductions can be reproduced, whether the reductions are safe, whether CRP testing increases the long term likelihood of patients consulting for similar illnesses in the future (the so called "medicalisation of self limiting illness"), how the interventions affected patients' antibiotic consumption, and whether the interventions are cost effective.

The most important and difficult question to answer is the one about safety. Weak observational data

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Alastair D Hay consultant senior lecturer in primary health care, Academic Unit of Primary Health Care, NIHR National School for Primary Care Research, Department of Community Based Medicine, University of Bristol, Bristol BS2 8AA

alastair.hay@bristol.ac.uk

Katy V Jüttner academic foundation year 2 doctor, Academic Unit of Primary Health Care, NIHR National School for Primary Care Research, Department of Community Based Medicine, University of Bristol, Bristol BS2 8AA

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suggest that the welcome trend towards lower rates of antibiotic prescription are associated with an increase in some septic complications, particularly in the very young and very old.^{7,8} Research to predict which patients are at risk of complications of respiratory tract infection is under way (www.descarte.org), and in the absence of other evidence, the National Institute for Health and Clinical Excellence has advocated the use of no (or delayed) prescription of antibiotics for respiratory tract infections in all but the highest risk patients.⁹

In the meantime, what should clinicians do? We believe there are three aspects to consider. Firstly, clinician's preferences for the intervention are likely to determine uptake. Secondly, differences exist in the starting points of different healthcare systems. Clinicians who already have point of care CRP testing may think that this study exonerates its use in patients with lower respiratory tract infection. For those who do not have access to this test, an economic evaluation would be helpful. Thirdly, CRP testing and enhanced communication skills have different strengths and weaknesses. CRP testing requires blood sampling, which is particularly problematic in children, and although it reduced prescription rates without affecting the severity and duration of illness in patients with acute cough, it may not be effective in other infections. In contrast, good communication skills are a cornerstone of high quality patient centred care for all conditions. They are required by regulatory bodies,¹⁰ are promoted to improve adherence to drugs,¹¹ improve patient outcomes,¹² and are incentivised financially (in the United States with reduced insurance premiums and in the UK through the quality and outcomes framework). Although most of us do not (yet) have access to the

training used in the trial, we can all try to improve our communication skills by reflecting on the issues that it covered. After all, what we say and how we say it seems to matter.

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Childhood disability and social policies

Thinking needs to extend beyond biomedical dimensions of disease

Participation (people's engagement in life) is an essential component of the World Health Organization's *International Classification of Functioning, Disability and Health*.¹ The classification connects body structure and function (including the impairments caused by any disease) with their effects on activity and participation, and it puts them in the context of personal and environmental factors. This biopsychosocial framework reflects a social model of disability in which a person may be disabled by external factors, including environmental and social forces beyond their control.

Children and young people with disabilities constitute about 4-6.5% of the population in many countries.^{2,4} They are disadvantaged in terms of their participation and engagement in life,⁵ and the limitations in their activity may be two to three times greater than for typically developing children.² In the linked study, Fauconnier and colleagues assess variations in the nature and rates of participation of 8-12 year old children with cerebral

palsy in several European countries.⁶ They found that pain, impaired mobility and limitations in cognitive or communicative function were associated with lower participation. Children's participation varied significantly across countries, even when analyses controlled for their impairments. The study was part of a wider project from the SPARCLE research group.^{7,8}

The study raises several important points that require further exploration, such as how we work with disability in children compared with adults who have acquired disabilities. This relates to the fundamental differences between the life circumstances of children and adults. In adults the focus is on rehabilitation to improve the person's functional status towards its preimpairment level. In children we are not trying to return to some pre-existing state, because that has yet to be defined. Rather, we should support the development of young people who are in the process of "becoming." Thus, our efforts in childhood disability should be to promote the

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Peter Rosenbaum professor of paediatrics, McMaster University, IAHS Building, Hamilton, ON, L8S 1C7, Canada
rosenbau@mcmaster.ca
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acquisition and enhancement of life skills in all dimensions, to enable young disabled people to participate in both the instrumental and discretionary opportunities of their lives, as the current study has explored.

Two findings of this study are particularly compelling. The first is the observation that children's participation varied substantially across nine European regions. This finding was predicted by the authors, who cited the social model of disability. This emphasises how much the environment contributes to people's possibilities in life engagement. However, this discovery also points to the powerful role that social, legislative, and other external influences can have on the day to day lives of people with disabilities and their families. For example, some policies in Denmark, such as financial help to poor families and transportation services for children to access recreational programmes, which are also important for children who are not disabled, seem to facilitate integration of children and young people with disabilities. This finding suggests that forward thinking community planners and policy makers can develop programmes that benefit everyone and particularly improve the lives of less advantaged citizens. The study presents a challenge to health professionals to recognise opportunities to improve the well-being of young disabled people through advocacy in the sociopolitical arena.

The second compelling finding is that after controlling for the severity of the children's impairments, which have a great effect on levels of participation, pain is strongly associated with lower levels of participation in children with cerebral palsy. Although this observation is not

surprising, it shows how important it is to assess children's pain status and manage it effectively, and to be aware of how pain control can potentially improve participation.

Like other work by the SPARCLE researchers, this study reflects modern thinking about health and function, especially as these problems concern disabled children and their families. If we can broaden our clinical thinking beyond the biomedical dimensions of diseases to include participation, as described by the *International Classification of Functioning, Disability and Health*, we may help improve the quality of life and long term wellbeing of disabled children and young people along with their families. The challenge is to explore and validate this optimistic notion with high quality prospective longitudinal studies that include participation as an outcome.

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Diagnosis and treatment of primary hypothyroidism

New guidance highlights how to do it in primary care



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Primary hypothyroidism or underactivity of the thyroid gland is common and is usually managed in primary care.¹ In recent years, increasing numbers of patients with and without confirmed thyroid disease have been diagnosed and treated inappropriately using levothyroxine and other thyroid hormones. Management that falls outside good practice as defined nationally and internationally by accredited thyroid experts may compromise patients' safety. This is potentially an enormous problem, given that in any one year one in four people in the United Kingdom have their thyroid function checked.^{2,3}

The Royal College of Physicians, working closely with several specialist professional associations and patient associations with interests in the safe management of thyroid diseases, has recently produced a statement on the diagnosis and management of primary hypothyroidism. This statement sets out clear guidance for general practitioners and the wider medical profession regarding the diagnosis and treatment of primary hypothyroidism in the United Kingdom.³ The box summarises the key messages of this statement.

So why have problems arisen regarding the diagnosis and treatment of hypothyroidism? The answer lies in

the epidemiology and pathophysiology of this disease. Hypothyroidism is common and is becoming more prevalent because of increased life expectancy and an ageing population. Thyroid hormones affect most organs, so hypothyroidism presents with symptoms that can mimic other conditions. Although hypothyroidism may be missed and other conditions such as depression diagnosed instead, patients are increasingly being diagnosed with hypothyroidism in the absence of abnormal thyroid function tests.

An incorrect diagnosis of hypothyroidism could expose some patients to the harmful effects of excess thyroid hormones and other serious conditions may go undiagnosed.⁴ In other patients, adequate replacement with levothyroxine does not resolve symptoms, which are attributed to hypothyroidism rather than other conditions that may coexist, such as depression.

A plethora of information is available on the internet, and media interest in alternative modes of diagnosis and treatment of hypothyroidism is high. This has caused an increase in requests for inappropriate investigations and non-standard treatments, as well as referrals to non-accredited practitioners.^{3,4} These factors have led to a rise

Amit Allahabadia secretary, British Thyroid Association, Department of Endocrinology, Sheffield Teaching Hospitals NHS Foundation Trust, Royal Hallamshire Hospital, Sheffield S10 3JF

amit.allahabadia@sth.nhs.uk
Salman Razvi treasurer, British Thyroid Association, Department of Endocrinology, Sheffield Teaching Hospitals NHS Foundation Trust, Royal Hallamshire Hospital, Sheffield S10 3JF

Prakash Abraham assistant secretary, British Thyroid Association, Department of Endocrinology, Sheffield Teaching Hospitals NHS Foundation Trust, Royal Hallamshire Hospital, Sheffield S10 3JF

Jayne Franklyn president, British Thyroid Association, Department of Endocrinology, Sheffield Teaching Hospitals NHS Foundation Trust, Royal Hallamshire Hospital, Sheffield S10 3JF

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Diagnosis and management of primary hypothyroidism³

Diagnosis

- Symptoms of hypothyroidism are common in other conditions and in normal health. Clinical symptoms and signs are insufficient to make a diagnosis of hypothyroidism, and thyroid function tests are essential
- The only validated test for thyroid function is the measurement of serum thyroid stimulating hormone (TSH) and free thyroxine (T4)
- These tests can be affected by non-thyroidal illnesses. In these circumstances, test results return to normal after the illness resolves, and thyroid hormone therapy is not needed and may be harmful
- Different assays may give different results, and there is an initiative to standardise reference ranges and units

Treatment

- The aim of treatment is to render the patient euthyroid; this is best achieved with levothyroxine alone. When adequate levothyroxine is given to lower the TSH to within the reference range, symptoms of hypothyroidism resolve; in some patients fine tuning of TSH within the reference range may be needed
- Patients with ongoing symptoms after appropriate thyroxine treatment should be investigated to diagnose and treat the cause
- No scientific evidence supports the addition of tri-iodothyronine (T3) to levothyroxine in any currently available formulation, including Armour thyroid (desiccated animal thyroid extract)
- Treatment with T3 can have adverse effects on bone (for example, osteoporosis) and the heart (for example, arrhythmia), and Armour thyroid contains excess T3 in relation to T4 that is not consistent with normal physiology

Treatment of subclinical hypothyroidism

- Subclinical hypothyroidism is defined as a TSH value above the upper limit of the reference range with a free T4 concentration within the reference range. Some patients, especially those with a TSH value greater than 10 mIU/L, may benefit from treatment with levothyroxine

Patients with normal thyroid function tests

- Patients with thyroid function tests within the reference ranges who have continuing symptoms, whether they are taking thyroxine or not, should be investigated for a non-thyroidal cause of their symptoms; an opinion may be sought from an endocrinologist or general physician

in awareness and confusion about hypothyroidism, and they have increased the workload in primary care.

In most cases the management of primary hypothyroidism is straightforward and should be undertaken in primary care. Secondary hypothyroidism is the result of pituitary disease and its treatment, and it should be managed only by specialist endocrinologists. Likewise, patients who take levothyroxine for thyroid cancer should be treated only in a specialist thyroid cancer clinic.

Normalisation of thyroid stimulating hormone means a return to normal health in most patients with primary hypothyroidism. If wellbeing is not restored

despite normal concentrations of thyroid stimulating hormone, it is important to exclude other conditions as the cause of ongoing symptoms. If no obvious cause is found the patient should be referred to an accredited hospital endocrinologist or general physician.

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Unemployment and health

Health benefits vary according to the method of reducing unemployment

The best guides we have to the possible future effects of mass unemployment are studies of previous epidemics. In men who had been continuously employed for at least five years in the late 1970s, mortality doubled in the five years after redundancy for those aged 40-59 in 1980.¹ Adjustment for socioeconomic variables, previous health related behaviours, and other health indicators had almost no effect on this increase.¹ The increased risk of mortality after redundancy tends to be greater in men than in women² because men are generally affected more from a prevailing belief that when things go wrong no one will be there to help.³

The detrimental effects of unemployment were widely recognised after the great depression of the 1930s. However, by the early 1980s unemployment became viewed, as it was by some in the very early 1930s, as a “price worth paying.” We learnt through bitter experience

again that it was not. By 2009 even the leader of the British Conservative Party argued that, “Unemployment is never a price worth paying and we need to take very big, bold and radical steps to help unemployed people back to work.”⁴

Research into mass unemployment during the early 1990s in the United Kingdom found that people in secure employment recovered more quickly from illness. In contrast, unemployment increased the chance of being ill, especially for those who had never worked or had had poorly paid jobs.⁵ Unemployment increases rates of depression, particularly in the young—who form most of the group who have never worked and who are usually most badly hit when jobs are few. Parasuicide rates in young men who are unemployed are 9.5-25 times higher than in employed young men.

In the UK, we know much about the detrimental

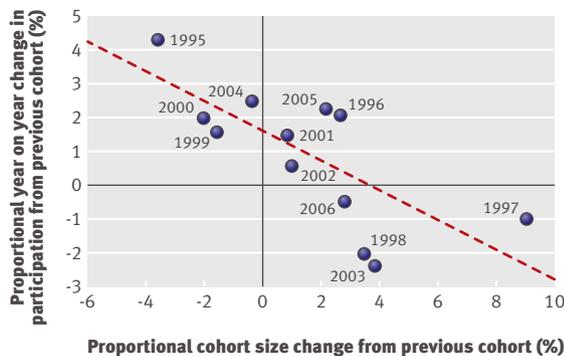
Danny Dorling professor of human geography, Department of Geography, University of Sheffield, Sheffield S10 2TN

daniel.dorling@sheffield.ac.uk

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Year on year change in the proportion of 18 and 19 year olds going to university in the UK between 1995 and 2005 versus the year on year change of the size of the cohort. Derived, with permission, from figures in two reports^{11,12}

health effects of unemployment and some of the methods used to alleviate it because the 1981 and 1991 censuses were taken during periods of mass unemployment, and because 1% of these census populations were studied longitudinally. For young people there is a continuum of health damaging states from being unemployed at one extreme to being placed on what were called youth opportunity programmes in the 1980s, to having a paid apprenticeship, to having a secure job, to being in college.

Youth opportunity-type schemes are almost as detrimental to psychological good health as is unemployment itself.⁶ Temporary employment is slightly better but not as good as a properly rewarded and organised apprenticeship.⁷ Secure work is better than all these options, but the best option for men and women aged 16-24 in the 1980s and 1990s was going to college, because factors associated with going to college were associated with lower suicide risks by the 1990s.⁸

The direct effect of reducing unemployment has been estimated to prevent up to 2500 premature deaths a year, but the indirect effects of being employed are thought to be far greater.⁹ Without the constant presence of unemployment income inequalities tend to fall because people simply walk out of poorly paid work when they are poorly treated.¹⁰

Work for the dole schemes were tried in the 1980s with detrimental effect. In recent times of mass unemployment with rising inequality, poorly paid work has become relatively more demeaning. The modern equivalent to the New Deal—the programmes through which America spent its way out of depression in the 1930s—would be to offer young adults a degree of government commitment that was comparable in sentiment but updated in real terms: good quality apprenticeships, permanent public funded jobs, and more highly valued education.

The most highly valued education is university education. The figure shows the year on year change in the proportion of 18 and 19 years olds going to university in the UK between 1995 and 2005 plotted against the year on year change of the size of the young cohort, both expressed as proportional changes (M Corver, personal communication, 2009). The figure shows that in 1997

UK universities coped with a sudden 9% increase in potential student numbers caused by a rapid increase in demand. There was only a small 1% fall in the proportion of young people going to university despite the large increase in the population aged 18 and 19 (because of the spike in births before the early 1980s recession). In 1997 the national number of university entrants thus increased by more than 8%.

Logistically, assuming that funding is available and students attain the required academic standards, university intakes could rise again by 8% in a single year if they had to. If this rise is combined with the anticipated 2% drop in the current size of the birth cohort, the proportion of young people going to university (around 30%) could increase by up to 10%—that is, around three extra young people in every 100 could go to university in a single summer. However, the figure also shows that when numbers of 18 and 19 year olds decline, national university student intake is usually held constant, not increased. Just as in the 1930s, radical measures like this would face great initial opposition. It was more than four years after the 1929 crash that the New Deal began to be implemented in the United States.

If three extra young people per 100 this summer go to university and are out of the job market, another three people could fill those jobs that the first three might have taken, another three percentage points come off the dole queue and fewer youngsters compete with older workers who have recently been made redundant. More importantly, this approach recognises that unemployment is bad for health, and that the best way of alleviating it is to show faith in and respect for the young, because they are always worst hit by unemployment. More education does not need to mean more debt.¹³ It is just a question of priorities and recognising when the time is right for someone to be there to help.

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