**Naughty eosinophils in chronic obstructive pulmonary disease**

Eosin is a stain that dyes cells pink, like rosy fingered dawn in Homer’s famous epithet, *eos rhododactylos*. The original meaning of “eosinophilic” would therefore be something like “loving that which pertains to the dawn,” or even “in love with Eos, the goddess of dawn.” But three millennia after Homer, eosinophilia leads us to the miserable exacerbations of chronic obstructive pulmonary disease. Or at least, it leads some people there. The presence of extra eosinophils in peripheral blood or sputum is generally taken to indicate a non-infective inflammatory process, often the result of hypersensitivity. About 40% of people with chronic obstructive pulmonary disease show eosinophilia during exacerbations. Enter mepolizumab, which disrupts the work of eosinophils by targeting interleukin-5, at a basic cost of £840 for 100 mg per month.

In two recent trials in people with eosinophilic chronic obstructive pulmonary disease, there were 0.3 fewer exacerbations per year in people taking 100 mg per month of mepolizumab than on placebo. Now let me see: there are 1.2 million people with diagnosed chronic obstructive pulmonary disease in the UK. Which means 480K with eosinophilia. Giving them all mepolizumab would cost £68 billion, and they might benefit by one exacerbation less over three to four years. I fear I am falling out of love with this goddess of dawn.


**Surgery for kids with resistant epilepsy**

Chopping bits out of children’s brains sounds like the work of villains in a Philip Pullman book (by the way, the latest is a good read). But it has its place, according to a trial in India.

“In this single centre trial, children and adolescents with drug resistant epilepsy who had undergone epilepsy surgery had a significantly higher rate of freedom from seizures and better scores with respect to behaviour and quality of life than did those who continued medical therapy alone at 12 months.”

As for the bits removed, they show 36 different kinds of histopathology in kids and adults, hippocampal sclerosis being the commonest.


**A CRISPR way to diagnose infectious diseases**

“There remains an important gap in our diagnostic armamentarium: rapid, reliable, easy to use, inexpensive diagnostic tests that can be conducted at the point of care.” I particularly like the “inexpensive”: less than the cost of a course of amoxicillin, and you’re home. “To this end, Gootenberg et al have reprogrammed an endonuclease that associates with clustered regularly interspaced short palindromic repeat (CRISPR) sequences in the DNA of prokaryotes (these sequences are part of prokaryotes’ adaptive immune system) to achieve single molecule analytical sensitivity for rapid nucleic acid detection.” This gets better and better. If you can get access to this piece, you must read it. An alternative title would be “SHERLOCK and the Case of the Promiscuous RNAase Activity.”


**Wealth and health in the UK and US**

Every true Briton knows that people live longer here than in America, and we tend to put this down to our universal health coverage. But here is a neat study comparing two cohorts, one in the US (the Health & Retirement Study) and the other in the UK (the English Longitudinal Study of Ageing) which shows close similarities in the effect of the most important health factor: wealth. The cohorts aren’t directly comparable, but the differences between top and bottom quintiles of income are very similar. In people age 54-64 in England, those in the highest wealth quintile had a 4% mortality and 17% disability risk over 10 years, compared with 16% and 42%, respectively, in the lowest quintile. It’s enough to make a Marmot want to dig a burrow.


**Weedkillers and the liver**

“Where Man is not, Nature is barren” said William Blake, and I agree. But I’m not sure Blake would have approved of fields being made barren by Man using glyphosate as a herbicide before using the land to grow high yield wheat. This ubiquitous practice has led to more and more glyphosate appearing in the urine of humans, at least in southern California where it rose 13-fold in two decades from 1993. At the same time, we are seeing an epidemic of fatty livers in richer countries, attributed to obesity and/or alcohol. Now it so happens that glyphosate in very low concentrations causes liver steatosis and fibrosis in mammal models. More epidemiology here please, and hurry up.

*JAMA* doi:10.1001/jama.2017.11726
Allergic eye disease
Darshak S Patel, Meena Arunakirinathan, Alastair Stuart, Romesh Angunawela

Allergic eye diseases include conjunctivitis and occasionally keratitis in response to an allergen. The diseases affect 10%-20% of people globally and have a negative impact on quality of life and productivity.

This article provides guidance on recognising the different forms of allergic eye disease and on their management.

Who gets allergic eye diseases?
Children and adolescents are more commonly affected by atopic disease in general, which tends to diminish with age. People with asthma, eczema, and rhinitis often experience concurrent ocular allergy.

How do they present?
Itching is the hallmark of allergic eye disease, which is accompanied by redness and watering of the eyes. Symptoms may occur in acute episodes which are generally recurrent or may be persistent in a chronic form.

Common allergic eye diseases
Seasonal and perennial allergic conjunctivitis are the commonest forms of allergic eye disease and are associated with childhood atopy. Seasonal conjunctivitis is triggered by pollen and frequently occurs in spring and summer. It is often associated with nasal symptoms (rhinoconjunctivitis).

Perennial allergic conjunctivitis is triggered by environmental allergens such as house dust mites, animal dander, fungal spores, or moulds, and does not follow a seasonal pattern.

Both types of conjunctivitis involve a type I hypersensitivity response, with degranulation of conjunctival mast cells in response to airborne allergens and release of inflammatory mediators including histamine. Patients might present with persistent low grade symptoms or acute exacerbations.

Ocular pain and loss of vision are unusual in simple allergic conjunctivitis. These symptoms might suggest vernal keratoconjunctivitis or conditions such as uveitis or an infective corneal ulcer, the latter being generally associated with contact lens use.

Examination
Assess visual acuity using the Snellen’s chart. Examine the lids for swelling and dermatitis. Use a torch, preferably with a magnifier, to assess for conjunctival redness or swelling and any obvious corneal or limbal irregularities. Subtarsal upper lid papillae are often evident. Figures 1 to 3 show many of the findings in allergic eye disease. Topical fluorescein can show signs of keratitis and can

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE
A patient with allergic eye disease reviewed the article and suggested amendments, specifically to include information on the psychological and functional impacts of allergic eye disease. He also provided his story “patient’s perspective,” which is online.

Rarer causes
In vernal and atopic keratoconjunctivitis, contact dermatoconjunctivitis, and giant papillary conjunctivitis both type I and type IV (delayed, cell mediated) hypersensitivity reactions are implicated. The latter involves migration and activation of T-helper cells, which confers chronicity.

How is it diagnosed?
A focused history can help differentiate allergic eye disease from other forms of red eye, see table opposite.

History
Ask about itching, the type of discharge, duration of symptoms, and exacerbating factors. Bilateral symptoms typically suggest an infective or allergic cause, although both can manifest asymmetrically. Red, watery, and itchy eyes recurring in the spring and summer are highly suggestive of allergic eye disease. Nasal symptoms might be present. Ask about recent coryzal illnesses or exposure to infected individuals, which can suggest an infective cause. A history of atopic diseases such as eczema or asthma favours an allergic cause. The use of eye drops should be established; this might be the cause of symptoms, as in contact dermatoconjunctivitis.

WHAT YOU NEED TO KNOW
- Allergic eye disease is usually bilateral and itching is the predominant symptom
- Uncomplicated disease can be managed in primary care with one or more of cold compresses, lubricants, topical and/or oral antihistamines, and topical mast cell stabilisers
- Topical and oral steroids and immunomodulatory agents should be prescribed only under the care of an ophthalmologist in refractory cases
be used in primary care for any red eye associated with pain, loss of vision, or photophobia.

**What treatment options are available in primary care?**

Patients with uncomplicated allergic eye disease, which mostly constitutes seasonal and perennial allergic conjunctivitis, can be managed in primary care with oral and topical antihistamines and mast cell stabilisers.

The box lists red flags that should prompt referral to acute hospital eye services. For acute symptoms, institute preventive measures and offer topical second generation antihistamines. Figure 6 summarises the recommended treatment algorithm for primary care management based on NICE guidelines and our experience.

Assess for clinical and symptomatic improvement at 1-2 weeks. The topical preparations available are summarised in table 3 (see bmj.com).

**Preventive measures**

Cold compress and instillation of refrigerated preservative-free lubricant eye drops can potentially induce local vasoconstriction and relieve acute symptoms, but there is limited evidence. Lubricants must be instilled regularly, at least four to six times a day.

For seasonal allergic conjunctivitis, advise reducing exposure to pollen and grasses by keeping houses and car windows closed during high pollen counts. Sunglasses can be useful to reduce pollen exposure.

For perennial allergic conjunctivitis, if there is a known trigger, measures to control that trigger (house dust mites, mould, and animal dander) can be initiated.

Evidence for the utility of allergen avoidance in allergic eye disease is poor, and few studies report on ocular symptoms as the primary outcome. In practice, multi-modal allergen avoidance methods might confer some benefit in perennial allergic conjunctivitis when the allergen is known, but the effectiveness is likely to be limited by patient compliance or financial constraints.

Advise patients to avoid eye rubbing as this can worsen redness and conjunctival swelling.

Contact lenses can trigger giant papillary conjunctivitis but can also exacerbate other forms of allergic eye disease. Contact lens wearers with an acute red eye should be assessed by a trained optician or ophthalmologist and offered guidance regarding optimal care of their lenses. Avoid or reduce contact lens use until acute symptoms subside. If this is not feasible, a second generation antihistamine eye drop should be used as described below.

**Pharmacological eye drops**

*Topical second generation antihistamines*

These are well tolerated and are dual acting, with secondary mast cell stabilising properties that make them effective for both acute symptoms and long term control. Agents in this class include emedastine, epinastine, azelastine, ketotifen, and olopatadine which are licensed for twice daily use. The dosing schedule of topical second generation antihistamines makes them practical for children with allergic eye disease as it eliminates the need for drop instillation during school hours.

* Mast cell stabilisers*

These drugs inhibit mast cell degranulation which is responsible for symptoms in seasonal and perennial
allergic conjunctivitis. Drugs include sodium cromoglicate, lodoxamide, and nedocromil sodium. Aside from frequently reported burning, all three are well tolerated.\textsuperscript{28} However, they need to be instilled four times a day. Additionally, they take several weeks to become effective and might not treat acute symptoms.\textsuperscript{29} Both these issues often culminate in treatment failure because of poor compliance.\textsuperscript{30} Hence, they are usually reserved for long term prophylaxis once there is adequate symptom control.

A Cochrane review (30 trials, 4,344 participants) found that topical antihistamines and mast cell stabilisers reduce symptoms in allergic conjunctivitis compared with placebo and are well tolerated. Overall, there was insufficient evidence to recommend one agent over the other because of study heterogeneity. No serious adverse events were reported.\textsuperscript{31} Switching between antihistamines and mast cell stabilisers can therefore be considered when there is treatment failure or intolerance, as outlined in figure 4.

Topical vasoconstrictors

Alpha-adrenoceptor agonists (eg, xylometazoline) can reduce conjunctival swelling, redness, and lid oedema. They are generally combined with topical first generation antihistamines (eg, antazoline phosphate). These combination drops are short acting and require frequent use, which can result in ocular discomfort, tachyphylaxis, and rebound redness on cessation.\textsuperscript{29,31} Over-the-counter availability has led to widespread use but long term use should be avoided. Avoid use in patients with cardiovascular disease and hypertension because of the sympathomimetic action of topical vasoconstrictors.\textsuperscript{32}

Systemic medications

Oral second generation antihistamines are less sedating than first generation, and are associated with a lower risk of cardiac arrhythmias.\textsuperscript{33} Drugs include fexofenadine, cetirizine, loratadine, levocetirizine, and desloratadine. All have shown comparable efficacy and safety in the context of allergic rhinoconjunctivitis, although studies looking specifically at ocular symptoms are lacking.\textsuperscript{34}

With isolated ocular symptoms, use topical medications as a first line, reserving oral second generation antihistamines for those with inadequate control on topical treatment or for those with concurrent rhinitis. As for topical treatments, oral second generation antihistamines can be used during acute episodes and continuously for long term prophylaxis.

What specialist management might help in refractory cases?

Consider referral to specialist eye services if symptoms do not settle, red flag signs appear, or in patients with chronic symptoms refractory to treatment. Corticosteroids and immunomodulatory therapies such as ciclosporin and tacrolimus may be tried in these patients either as topical or systemic treatment. These drugs are to be used only under the care of an ophthalmologist. See bmj.com for details of these treatments.

What is the long term outcome?

Seasonal and perennial allergic conjunctivitis tend to have a chronic course with recurrent exacerbations. They are not usually associated with visual loss, although if untreated they can manifest with reversible corneal epithelial changes.\textsuperscript{41}

Managing the patient’s expectations is paramount. Explain that the aim is to relieve symptoms and allow them to resume normal activity. It might take several weeks to suppress symptoms and elimination might not be possible.

For all allergic eye disease, if there is good symptom control with a topical second generation antihistamine or mast cell stabiliser, regular follow-up is not essential. Advise patients to return to primary care if their symptoms are not adequately controlled or if they develop pain or loss of vision.

Fig 4 An algorithm for the management of allergic eye disease in primary care, based on NICE guidelines and the authors’ experience

Competing interests None declared.

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Find the full version with references at http://dx.doi.org/10.1136/bmj.j4706
A doctor’s first duty is to his or her patient, but this needs to be balanced with respect and understanding for the network of other people who provide care and emotional support.

The four commonly accepted principles of healthcare ethics are summarised in box 1. In relation to communication with relatives, respect for autonomy is, in our opinion, the ethical principle that may be most problematic in clinical settings. This article aims to provide doctors with help when communicating with relatives and explores some ethical guidance for doing this while supporting the expectations of relatives such as those set out in box 2. The term “relative” is used to mean a close friend or family member who is part of the patient’s network. Where legal considerations are highlighted, these are based on guidance within the UK.

**Disclosing information when a patient lacks capacity**

*Case scenario: part 1—* A 73-year-old man is admitted to hospital, having been found unconscious outside a shop. In order to establish more about his medical history, we need to contact a relative.

The principle of respect for patient autonomy acknowledges the right of a patient to have control over their life—and this would include the right to decide who should have access to personal information. Therefore, by breaking confidentiality, clinicians may not be respecting patient autonomy.

The patient described in case scenario part 1 lacks capacity to consent to his relative being contacted as he is unconscious. In the UK, the principles of the Mental Capacity Act⁴ would be used to help make this judgment (see box 3).

The question of whether it is wrong to breach confidentiality is determined by the consequences of the breach. On balance, it seems sensible to telephone a relative to obtain medical history.

### WHAT YOU NEED TO KNOW

- Conversations with relatives require a careful balancing of patient autonomy and recognition of the network of support that many people rely on.
- Conversations can be emotional and anxiety-provoking.
- It helps relatives if clinicians can explain the ethical rationale behind decisions, especially related to confidentiality.

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**Box 1 | Overview of ethical principles in medicine**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respect for autonomy</td>
<td>Respecting the decision making capacity of a patient; enabling individuals to make reasoned informed choices</td>
</tr>
<tr>
<td>Non-maleficence</td>
<td>Avoiding the causation of harm to the patient</td>
</tr>
<tr>
<td>Beneficence</td>
<td>To have the welfare of the patient as the goal</td>
</tr>
<tr>
<td>Justice</td>
<td>Fairness and equality of the distribution of health resources</td>
</tr>
</tbody>
</table>

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The patient’s healthcare records can be used to identify the nominated “next of kin.” In the UK, the next of kin does not necessarily need to be a relative, and there is no legal hierarchy of relative (except in particular situations involving the Mental Health Act).⁴ Avoid making assumptions about how much a patient would want their relative to know about their current situation and consequently try to keep the information that is disclosed to a minimum.

On the telephone balance the need to provide correct information with concern for the relative’s feelings when they receiving unexpected difficult news.⁶ Show empathy by speaking slowly, using a soft tone and saying something like, “Hello, Mrs X, I am … a doctor from … hospital. I am afraid I have some bad news. Are you in a place you can talk?”

If you are unable to get through, consider leaving a message, such as: “Hello my name is … I am calling from … Hospital, please call the emergency department on this number and ask to speak to me.”

During any communication via telephone, it is important to end the conversation with clear instructions for the relative, including a point of contact.
Disclosing information to relatives without the patient present

Case scenario: part 2—The patient slowly improves and is diagnosed as having had a seizure. The team thinks he has capacity to make decisions regarding his medical treatment. He is found to have an incidental finding of a likely brain tumour on cranial computed tomography. His daughter wants the team to discuss the findings of the CT scan with her first.

In case scenario part 2, balance your duty of confidentiality with maintaining respect for the daughter’s concerns.

In this situation, it would be wrong to disclose any information to relatives without the patient’s consent. However, his daughter may have useful information about the patient’s health and good reasons for wanting to protect her father from the diagnosis.

Collusion is generally accepted as a secret agreement or cooperation between two or more people who are trying to deceive, and goes against the principle of patient autonomy. Legally (within the UK, according to the General Medical Council) clinicians are able to listen to relatives’ concerns without disclosing information.

Educating into practice

• Think about the last time you spoke to a relative.
• Do you think the relative was satisfied with the conversation?
• How might you change your approach next time?

However this may be seen by the patient as collusion and lead to mistrust. A suggested approach would be to say to his daughter, “I am happy to listen to your concerns, but I will need to involve Mr X in any decisions about his care, so I may have to share details of our conversation with him and it may be better if we can discuss these things together.”

Check what the patient wants to know and suggest the option of talking to him and his daughter separately if he prefers. Different people can take in information at different rates.

Communicating with relatives when opinions differ

Case scenario: part 3—The patient has been reviewed by the multidisciplinary team and is ready for discharge. His daughter does not want him to be discharged home.

Listen to the daughter’s concerns (case scenario part 3) while adhering to the principles of confidentiality. She is likely to know the patient well, may have further information, and may be responsible for providing ongoing care at home. She may need support in understanding and respecting her father’s decision.

There is often a balance to be achieved between the patient’s safety while at home (beneficence and non-maleficence) and his wish to go home (his autonomy). Ethically, as long as the patient is well informed, try to respect the patient’s autonomy, even if you think that they are making an unwise decision. Work with the patient, relatives, and the multidisciplinary team to try to reduce risks at home as much as possible.

If the patient does not have capacity to make decisions about the discharge destination, his clinical team must make a best interests decision, balanced between patient autonomy, beneficence, and non-maleficence. The Mental Health Act suggests we should choose the less restrictive option, meaning making a decision that interferes least with the person’s rights and freedoms of action. It can help to be explicit about this with relatives—for example: “Our team has assessed Mr X, and we accept that there are risks to him going home. We are balancing these with his wish to continue living at home. We cannot guarantee he will not fall again, but we will do what we can to reduce his risk of future falls. To recommend that he cannot carry on living at home based on his risk of falls would be overly restrictive.”

A helpful approach is to make time to discuss clinical decisions with patients and their relatives together where possible. Maintaining compassion during encounters with relatives can be emotionally draining. Debriefing and supervision are ways in which clinicians can acknowledge and discuss these issues.
UNCERTAINTIES

Can we usefully stratify patients according to suicide risk?

Matthew Michael Large,1 Christopher James Ryan,2 Gregory Carter,3 Nav Kapur4

1 School of Psychiatry, University of New South Wales, NSW, Australia
2 Discipline of Psychiatry, Westmead Clinical School and Sydney Health Ethics, University of Sydney, Australia
3 Centre for Brain and Mental Health, Faculty of Health and Medicine, University of Newcastle
4 Centre for Suicide Prevention, Manchester Academic Health Science Centre, University of Manchester, and Greater Manchester Mental Health NHS Foundation Trust, Manchester, UK

Correspondence to: M M Large mmclarge@gmail.com

This is one of a series of occasional articles that highlight areas of practice where management lacks convincing supporting evidence. The series advisers are Sera Tort, clinical editor, and David Tovey, editor in chief, the Cochrane Library. To suggest a topic, please email us at uncertainties@bmj.com

In the UK, one in five adults has considered suicide and one in 15 has attempted suicide.1 Half of those who attempt suicide seek help afterwards—a quarter from a GP, a quarter from a hospital or specialist medical or psychiatric service.3 Doctors are often advised to use suicide risk assessment to help them decide management plans. A wide variety of risk factors have been implicated in the stratification of potentially suicidal patients.2 This stratification is often expressed in terms of high, medium, or low risk.4–6 In practice, doctors commonly give the greatest importance to suicidal ideation.7,8 However, there is virtually no evidence that any of the methods of suicide risk stratification can contribute to suicide prevention.9

What is the evidence of the uncertainty?
Statistical challenges in risk stratifying suicidal patients

Although suicidal ideation and suicide attempts are quite common, the rate of death by suicide in the community is only about one in 10 000 per annum.9 A method that could identify a substantial proportion of future suicides without too many false positives would provide a useful focus for suicide prevention strategies and communication with patients and their families.

Probably the most important measure of the accuracy of a suicide risk assessment is its positive predictive value (PPV).10 PPV is the probability that a patient in the “high risk” stratum will go on to die by suicide. PPV is important because it defines the number of false positive cases who must be treated in order to treat each true positive. Unfortunately, the combination of the modest strength of the statistical association between being a high risk patient and suicide, and the low base rate of suicide places a ceiling on the PPV. This ceiling has made clinicians uncertain of the benefit of risk stratification.

Review of recent meta-analyses

We identified seven recent and relevant meta-analyses (table, see bmj.com).11–17 Almost all of the primary research synthesised by the seven studies was conducted among psychiatric patients or people presenting with self harm. Six of the seven meta-analyses can be regarded as of high quality because they adhered to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.18

WHAT YOU NEED TO KNOW

• Despite the ubiquity of advice to use suicide risk assessment in clinical practice, there is no evidence that these assessments can usefully guide decision making
• All patients presenting with a mental health problem require a thorough and sympathetic assessment with the aim of negotiating an individualised treatment plan
• All patients with suicidal thoughts or behaviours should be offered evidence based therapies for treatable problems associated with suicide, such as substance misuse disorder and depression
• The overwhelming majority of people who might be viewed as at high risk of suicide will not die by suicide, and about half of all suicides will occur among people viewed as low risk

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS MANUSCRIPT

Four patients with a history of suicidal thoughts or behaviours provided written feedback on a draft of the manuscript. Some alterations were made in response to their suggestions. All four patients were critical of suicide risk stratification and strongly supported individualised assessments leading to treatment plans based on their preferences and needs.
Future research might also concentrate on suicide among primary care patients or the general population. However, while it is possible that suicide risk assessment might have a greater power of discrimination in these populations, the much lower base rate of suicide will place similar limits on the positive predictive value and clinical utility of higher risk strata.

What should we do in the light of the uncertainty?

Do not subject people who present with mental illness or psychological distress to an assessment that attempts to stratify them into groups considered to be at higher or lower risk of suicide. While suicide risk stratification does provide some prognostic information in a statistical sense, it does not provide enough information about the likelihood of future suicide to guide clinical practice. The low positive predictive value of risk stratification means that most people who receive a treatment because of their high risk status will never die by suicide, and the limited sensitivity means that some low risk patients, who will die by suicide, might be deprived of treatment options.

Instead focus the assessment on the content and nature of the communication between the patient and the doctor and the opportunity to address what the patient needs (see box). This involves identifying common modifiable social and clinical factors for suicide and then addressing them in an individually negotiated treatment plan. Most modifiable factors require treatment in their own right—for example, assisting a person with depression or substance misuse. This is an approach to management based on the patient’s current treatment needs and not on clinicians’ perceptions of their future suicide risk. Such a needs based approach should involve offering evidence based treatments for a wide variety of common social and clinical problems including any mental disorder, alcohol and drug misuse, relationship difficulties, employment and accommodation problems.

Use active listening, be respectful, thorough, and sympathetic. Do not dismiss any patient who raises concerns of suicide as being at low risk. Use each assessment as a dialogue, first with the patient and then with his or her family or friends. Offer every patient an individualised treatment plan based on his or her needs and preferences. Reserve psychiatric admission for situations when treatment in a less restrictive setting is not wanted by the patient or is just not feasible. Some patients will have access to lethal suicide methods. Restriction of lethal suicide methods is one of the most well accepted interventions to reduce suicide and should be addressed with every patient irrespective of perceptions of suicide risk. Agree a treatment plan with every patient with suicide thoughts. Don’t let anyone go home without some action agreed.

Competing interests. See bmj.com.

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Find the full version with references at http://dx.doi.org/10.1136/bmj.j4627

How to approach a patient who you think might be suicidal

- Conduct a respectful, thorough, and sympathetic assessment using active listening
- Keep a focus on the content and nature of the doctor-patient interaction
- Try to understand and address the individual circumstances that are distressing the patient
- Identify the patient’s current treatment needs, including common modifiable social and clinical factors for suicide
- Do not attempt to stratify patients into high and low risk categories
- Do not simply rely on the patient’s expression or non-expression of suicide plans and ideas
- Never dismiss any patient who raises your concern about suicide as low risk
- Talk with the patient’s family or friends
- Ask about firearms and other lethal methods of methods of suicide
- Involuntary hospitalisation should be used sparingly and with great care
- Negotiate a management plan with every patient
- Document your assessment, reasoning, and treatment plan

Individual risk factors for suicide

None of the meta-analyses found that any individual clinical risk factor,1418 including suicide thoughts and behaviours,1112 was sufficiently accurate to be useful as the basis to allocate interventions. One meta-analyses estimated the absolute risk for suicide of those with suicidal ideation was about 1% over a year (1.4% in psychiatric and 0.23% in non-psychiatric patients).19

Risk stratification by combining risk factors

Three meta-analyses included primary research that characterised some patients as high risk based on the presence of a combination of clinical and demographic factors.1517 Two meta-analyses found that 5% of high risk patients will die by suicide in the long term,1117 a proportion that is very similar to the long term suicide risk associated with severe psychiatric disorders such as schizophrenia17 and affective disorders.18 No high risk determination, whether based on a model that integrated multiple risk factors15 or a suicide risk scale19 was strongly associated with later death by suicide. Moreover, almost half of all patients who die by suicide come from lower risk strata, indicating a low sensitivity in high risk status.15

Is ongoing research likely to provide relevant evidence?

Two of the meta-analyses specifically examined whether the predictive strength of risk assessment had improved over recent decades: both found it had not.1316 We also searched the International Clinical Trials Registry21 and the International Register of Systematic Reviews22 and found no evidence of any upcoming trial testing the ability of risk stratification to reduce suicide or any relevant systematic review.

Incremental improvement in risk stratification might occur if there is identification of previously unknown risk factors,23 or new ways of combining established risk factors with methods derived from artificial intelligence research.24 But to be useful to a clinician, new methods of suicide risk stratification would need to be several orders of magnitude more powerful than the existing methods. Future research might also concentrate on suicide among the predictive strength of risk assessment had improved sensitivity in high risk status.

How do you currently identify patients at risk of suicide?

How has this article changed the way you will approach conversations with patients who you suspect may be at risk of suicide?

How will you follow up patients who you suspect may be at risk of suicide?
A 35 year old vegetarian Indian woman who had been living in the UK for three years presented in the emergency department with a first episode of seizure after a trip to India. She had undergone total thyroidectomy for toxic nodular goitre in the UK earlier in the year and was taking calcium supplements. She had experienced vague abdominal discomfort two weeks before the seizure. The patient’s grandmother, whom the patient visited during her trip to India, had experienced delirium, dizziness, and headaches two months before the patient’s visit. These symptoms self resolved and were not investigated. In addition, the patient’s husband also experienced vague abdominal discomfort similar to the patient’s, two weeks before she presented. The woman had a magnetic resonance imaging (MRI) scan in the emergency department (fig 1). What is the diagnosis based on the MRI findings?

Submitted by Harshavardhan Bandi, Rizwan Khan, and Vinod Dibbur
Patient consent obtained.

Cite this as: BMJ 2017;359:j4664

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A 68 year old woman presented with worsening shortness of breath on exertion. She had a history of polycystic kidney disease, chronic renal failure, renal transplant, and secondary hyperparathyroidism and hypercalcaemia while she was on dialysis. She had left mastectomy for breast cancer, and was on multiple medications including tacrolimus and prednisolone. Blood tests and clinical examination were unremarkable but a chest radiograph noted multiple bilateral nodular densities. Therefore a computed tomography scan was organised. What does this cross-sectional computed tomography scan (figure, lung window) show?

Submitted by Subramanian Nachiappan and David C Howlett
Patient consent obtained.

Cite this as: BMJ 2017;359;j4773

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Minerva pictures are cases which offer an educational message, and can be intriguing and of interest to a general medical audience. They should be submitted as “Minerva” via our online editorial office (ScholarOne) and should follow our specific advice on submitting images. Please provide two or three sentences (no more than 100 words) explaining the picture, and please send us the signed consent to publication from the patient. We need written consent from every patient, parent, or next of kin, regardless of whether the patient can be identified or not from the picture.

For more information, contact Robin Baddeley rbaddeley@bmj.com
**Traumatic optic nerve head avulsion**

A 7 year old boy injured his right eye while riding a bicycle. The handlebar was presumed to have impacted the globe resulting in gouging contusion injury. He presented with extensive soft tissue damage to the eye and orbit. The eye was proposed with marked restriction of movement in all directions of gaze. The boy had an amaurotic right pupil. His visual acuity was 0.00 (LogMAR) left, no perception of light (NPL) right. Funduscopy showed avulsion of the optic nerve head with vitreous haemorrhage and commotio retinae (bruising and oedema of the retinal layers secondary to shockwaves that traverse the eye). Optic nerve avulsion is a rare and devastating consequence of ocular trauma, in this case presumed to be related to a rotational and forward motion of the globe by the handlebar of the bicycle. Bar absent vision, and an afferent pupillary defect, the rest of the ocular examination may be unremarkable. A curious aspect of blunt trauma to the eye is that with minimal or no anterior damage there may be a significant posterior injury. In this case the optic nerve head is pulled away from the retina and an associated haemorrhage is seen emanating from the void. There is no known treatment for this condition. Patients can be monitored for complications including ptosis bulbi (shrunken eye) and secondary neovascularisation or rubecic glaucoma (leading to a painful red eye).

**Polycystic ovary syndrome**

Insulin resistance and obesity are features of polycystic ovary syndrome and cross sectional surveys show strong associations with type 2 diabetes. A longitudinal population based study from Denmark (J Clin Endocrinol Metabolism doi:10.1210/jc.2017-01354) confirms the link and quantifies the risk. Among more than 18,000 women with polycystic ovary syndrome the incidence of type 2 diabetes was four times higher than in age matched controls, and the median age at diagnosis was 4 years younger.

**Bicuspid aortic valves**

Bicuspid aortic valves are the commonest congenital cardiac abnormality, present in 1% to 2% of people. Most bicuspid valves arise from a fusion of two leaflets of a tri-leaflet valve. In a large series of adult cases, fusion of the right and left coronary cusps was most common, followed by fusion of the right and non-coronary cusps (Heart doi:10.1136/heartjnl-2017-311560). Fusion of the left and non-coronary cusps was rare. Aortic stenosis was most likely to occur in patients with the first type of fusion.

**Cystatin C**

Creatinine based estimates of glomerular filtration rate lead to overdiagnosis of chronic kidney disease, and guidelines recommend that the diagnosis should be confirmed using cystatin C as a different measure of kidney function. In a large group of older people in a primary care setting, however, this approach resulted in more misdiagnosis rather than less (Plos Med doi:10.1371/journal.pmed.1002400). Although a small proportion were re-classified as not having kidney disease after cystatin C testing, nearly 60% were moved to a more advanced category of disease.

**Exploring the insula**

The insula is buried behind the cortex of the frontal, temporal, and parietal lobes and its functions are mysterious. More than 50 years ago the neurosurgeon Wilder Penfield reported that direct stimulation of the insula in conscious patients sometimes gave rise to olfactory and gustatory sensations. A more extensive study (Ann Neurol doi:10.1002/ana.25010) using stereotactically placed depth electrodes for presurgical evaluation in patients with epilepsy replicates the earlier observations. It locates the mid dorsal insula as an area of the brain involved in the conscious perception of flavours.

**Exposure to air pollution in early life**

Urban areas with the worst domestic air pollution in the early 1950s had the highest mortality rate from rheumatic heart disease half a century later according to a geographical analysis in England and Wales (Int J Epidemiol doi:10.1093/ije/dyw249). The investigators speculate that air pollution increased children’s susceptibility to infection with group A, β haemolytic streptococci. The finding might be of more than historic interest because rheumatic fever and rheumatic heart disease are still common in parts of the world where biomass fuels are widely used and levels of smoke pollution high.

**Ecological fallacies**

Studies based on aggregated data are vulnerable to the ecological fallacy. Associations observed at group level don’t necessarily hold for the individuals within those groups. It’s a potential problem with the study of air pollution mentioned in the story above. It also turned out to be a very real problem in an evaluation of hospital performance in the Netherlands (BMJ Qual Safety doi:10.1136/bmjqs-2017-006776) where hospital level associations between mortality, readmission, and length of stay often failed to reflect patient level associations. In patients with stroke, for example, longer length of hospital stay was related to reduced mortality, whereas hospitals where length of stay was long had higher mortality rates.