education

FROM THE JOURNALS Edited highlights of weekly research reviews on https://bit.ly/2PLtil8

Medical marketing in the US

Thirty billion dollars—that's the total spent on medical marketing in the US in 2016, an increase from $18 billion in 1997. Two Dartmouth researchers—Lisa Schwartz, whose recent premature death was widely mourned, and Stephen Woloshin—quantified how the money spent on medical marketing has changed over those years, using a literature search and queries to industry, government, and non-governmental organisations. The most breakneck pace was set by direct-to-consumer pharmaceutical advertising, which increased from $2.1 billion (11.9%) of total spending in 1997 to $9.6 billion (32%) of total spending in 2016. But old reliable methods of marketing still make themselves felt: $979 million was spent in 2016 on direct payments to physicians. Laboratory testing is a widespread topic of advertising; 64% of direct to consumer advertising in 2016 was spent convincing consumers to undergo genetic testing, mostly for reasons with little to do with promoting health or the prevention of disease. Schwartz and Woloshin's data gathering and searching provide important food for thought and guidance for policy.

JAMA doi:10.1001/jama.2018.19320

Are there enough primary care clinicians in the US?

According to estimates from the US Department of Health and Human Services in 2013, there aren't enough primary care providers in the US, and the shortage will get worse. What to do? A group of researchers used databases of physicians and nurse practitioners, comparing the trends in numbers and density of physicians and nurse practitioners between 2010 and 2016. They analysed differences in these trends between rural and urban areas, and across levels of income. The conclusions are clear. There are more physicians than nurse practitioners; however, the number of physicians is flat, while the number of nurse practitioners is increasing, especially in poorer and more rural regions. The analysis is incomplete as there is no all encompassing registry of all providers, and cohort trends can be confounded. For most things physicians and nurse practitioners provide equivalent care, so perhaps nurse practitioners really are the future saviours of access to primary healthcare in the US.

JAMA doi:10.1001/jama.2018.17944

Zackary Berger is an associate professor at Johns Hopkins School of Medicine and core faculty in the Johns Hopkins Berman Institute of Bioethics

Opioids, pneumonia, and HIV: what causes the association?

Is the prescription of opioids associated with community acquired pneumonia, and how does the association among people living with HIV compare with those without HIV? This study takes as its point of departure the fact that some opioids are more immunosuppressive than others, and that people living with HIV are more susceptible to a variety of infections. Using a cohort of patients from Veterans Administration hospitals and supplemental data from the US Center for Medicare and Medicaid Services, the researchers performed a nested case-control study. The hypothesised association between opioid prescriptions and community acquired pneumonia checks out, and the association is stronger both for more immunosuppressive opioids and for people living with HIV compared with those without HIV. But is this due to immunosuppression or some other association of opioids, such as pain? Chronic pain is often under-recorded or not coded. Do we know whether chronic pain predisposes people to infection? While the association of opioids with adverse effects is important, potential mechanisms seem multiple and worth exploring.

JAMA Intern Med doi:10.1001/jamainternmed.2018.6101

Associations of intimate partner violence, sexual assault, and post-traumatic stress disorder with menopause symptoms

A group of researchers in northern California did a cross-sectional survey of women aged 40-80 to find out how common are physical and emotional intimate partner violence, sexual assault, and post-traumatic stress disorder, and whether these are associated with symptoms of menopause. The lifetime prevalence of intimate partner violence (emotional 21%, physical 16%), sexual assault (19%), and current symptoms of post-traumatic stress disorder (23%) was unsurprising. The researchers found that these types of emotional trauma were associated with sleep difficulties, vasomotor symptoms, and vaginal symptoms accompanying menopause. While no causal conclusions can be drawn, the authors discuss some implications for primary care providers to consider: the importance of emotional trauma in women without a high prevalence of depression and anxiety, and its connection to symptoms that are often potentiated by physical and emotional stress.

JAMA Intern Med doi:10.1001/jamainternmed.2018.5233

Herpes zoster ophthalmicus

CPD READING
0.5 HOURS

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A 70 year old man attended with a two day history of painful vesicular rash affecting the left forehead accompanied by a red, painful left eye. Three days before the onset of the rash, he had experienced a tingling sensation at the left forehead. A clinical diagnosis of herpes zoster ophthalmicus with ocular involvement was made.

Herpes zoster ophthalmicus accounts for 10-20% of cases of herpes zoster infection.[1] Patients usually present with painful, vesicular, dermatomal rashes affecting the ophthalmic division of the trigeminal nerve (V1). The diagnosis is usually made on clinical grounds but a viral swab can confirm the diagnosis.

Currently there is a shingles vaccination programme available in the UK for people over 70. It has been shown to reduce the incidence rate of shingles and post-herpetic neuralgia.

Herpes zoster ophthalmicus may present with ocular involvement such as conjunctivitis, keratitis, iritis, and uveitis. It can also present without ocular involvement (where only the skin of the V1 dermatomal region is affected). Herpes zoster infection may rarely present without any cutaneous manifestation, also known as "zoster sine herpete," with or without ocular involvement, rendering the diagnosis more difficult.[2]

This article aims to discuss the key points to cover in a history, examination, and initial management plan for a person attending primary care with a likely diagnosis of herpes zoster ophthalmicus.

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

We consulted a patient who presented to the eye emergency department with left keratouveitis following a recent herpes zoster ophthalmicus infection. He was affected by ocular pain and photophobia as well as neuropathic pain at the V1 dermatome. His clinical problem has been taken into account during the writing of the "History" and "When to refer" sections. We highlighted the symptoms and signs of uveitis, and the importance of recognising and managing post-herpetic neuralgia in patients with herpes zoster ophthalmicus.

WHAT YOU NEED TO KNOW

- Offer patients systemic antiviral medication to reduce complications, notably post-herpetic neuralgia
- Herpes zoster ophthalmicus may directly involve the eye or may occur without ocular involvement, where only the skin of the V1 dermatomal region is affected
- Refer to ophthalmology if a patient has ocular symptoms or signs

EDUCATION INTO PRACTICE

- How do you obtain ophthalmology advice for a patient with suspected herpes zoster ophthalmicus and ocular involvement?
- How do you counsel the patients on the risk of post-herpetic complications, eg, post-herpetic neuralgia?
- Do you routinely provide shingles vaccination to people in their 70s?

What you should cover

History

Presenting complaint

When did the rash start? Starting oral antiviral treatment within 72 hours of the onset of rash substantially reduces the risk of long term ocular complications.[3] Evidence is unclear whether oral antiviral treatment within 72 hours also reduces the incidence and severity of post-herpetic neuralgia.[4 5]

Is there any pain affecting the eye or the periocular skin? Eye pain, but not periocular pain, suggests ocular involvement.

Patients with "zoster sine herpete" describe neuropathic pain affecting the V1 dermatome without any rash.

Are there other ocular symptoms such as photophobia, discharge, visual loss/disturbance, floaters, flashing light, or diplopia?

Medical/ocular history

Is there any recent systemic illness? Active systemic illness can impair immunity increasing the risk of developing herpes zoster.

Is there any history of chickenpox or herpes zoster infection? Recurrent episodes should prompt investigation for immunosuppression.

Is the patient immunosuppressed (any history of HIV, organ transplantation, or malignancy)? Immunosuppressed patients may present with a more aggressive clinical course that requires intravenous antiviral treatment.

Drug history

Is the patient on any immunosuppressive drug?

Has the patient received any shingles vaccination recently? Studies have shown that shingles vaccination, which contains live attenuated varicella zoster virus, may rarely result in reactivation of herpes zoster ophthalmicus.[6]

Social history

Is there any recent contact with patients affected by chickenpox or herpes zoster infection? Is there any close contact with children, pregnant women, or immunosuppressed individuals? If yes, those who have been in contact with the patient are advised to look out for symptoms of chickenpox or shingles and seek medical attention.

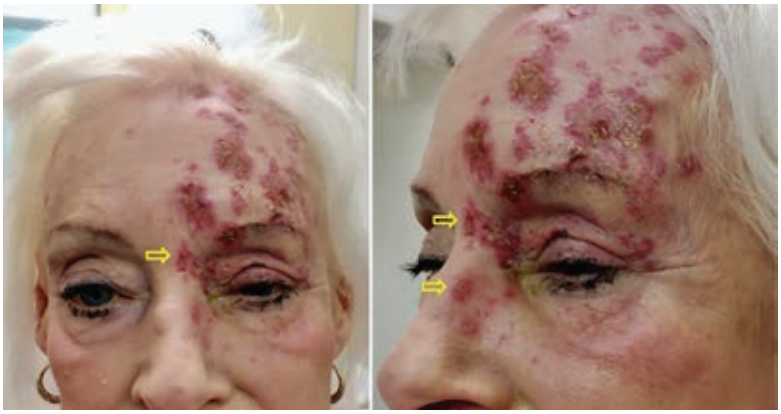

Fig 1 | A patient with left herpes zoster ophthalmicus affecting the forehead and side of the nose (positive Hutchinson's sign; *yellow arrows*). The crusted skin rashes follow the V1 dermatomal distribution and do not cross the vertical midline

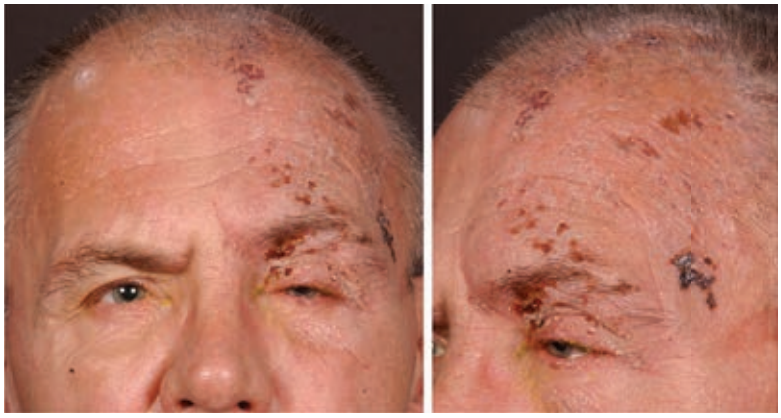

Fig 2 | A patient with left herpes zoster ophthalmicus affecting the forehead but not the nose (negative Hutchinson's sign). The crusted skin rashes follow the V1 dermatomal distribution and do not cross the vertical midline

Examination

General examination

Pattern of rash—whether the vesicular rash follows the V1 dermatomal distribution and does not cross the midline of the face (figs 1 and 2).

Presence of Hutchinson's sign (fig 1)—rash involving the tip, side, or root of the nose. This sign indicates the involvement of the nasociliary branch of the trigeminal nerve, and is a strong predictor of ocular inflammation and permanent corneal denervation in herpes zoster ophthalmicus (relative risk of 3-4 times).[7]

Unilateral or bilateral periorbital swelling—bilateral involvement is usually due to gravitational oedema, rather than because of spread of infection to the contralateral side of the face.

Signs of secondary bacterial infection purulent discharge or worsening, high grade fever.

General wellbeing—if the patient is confused, consider the possibility of coexisting encephalitis.

Ocular examination

Formally examine visual acuity using, for example, a Snellen chart. Examine the external eye for conjunctival redness. Consider instilling a drop of fluorescein 1% to check for corneal pseudo-dendrites using a blue light. Presence of fluorescein stained corneal changes requires a more urgent referral to ophthalmology

Consider viral swab cultures for herpes simplex virus and varicella zoster virus if there is diagnostic uncertainty about whether it is shingles.

Other causes of rash around the eye include herpes simplex virus, impetigo, and contact dermatitis.

What you should do

The diagnosis is usually made on clinical grounds (ie, dermatomal rashes affecting the V1 region and stopping at the midline of the face). Take a viral swab from active vesicles if there is any uncertainty.

Initial stage

Start all patients with herpes zoster ophthalmicus, with or without ocular involvement, on systemic antiviral treatment within 72 hours of the onset of rashes.[8] Systemic antiviral treatment can be offered beyond 72 hours after the onset of rashes (if there are new blisters forming), because the risk of side effects of treatment is low. The first line treatment in the UK is oral aciclovir 800 mg five times a day for 7-10 days. Alternatively, oral famciclovir or valaciclovir may be used as a second line treatment.[8]

If superimposed bacterial infection is suspected start an oral antibiotic.

Consider prescribing analgesia such as topical capsaicin cream, amitriptyline, or gabapentin, for neuropathic pain. Explain to the patients that there is a risk of post-herpetic neuralgia.

Consider prescribing lubricating eye drops for comfort if there are lesions near the eyelid. Topical aciclovir or antibiotic eye drops are usually not recommended acutely.

Stromal keratitis or uveitis requires topical steroids to treat the disease and alleviate the pain. Topical anaesthesia is not used as it prevents corneal healing and may worsen corneal denervation.

Advise patients to avoid contact with children, pregnant women, and immunosuppressed individuals, until the vesicles have crusted over (this usually takes 1-2 weeks).

When to refer

Refer to ophthalmology

Refer patients with ocular symptoms such as eye pain and blurred vision, and/or signs, including red eye and positive corneal staining with fluorescein, to the ophthalmology team for further examination. This will include a comprehensive external eye examination and a dilated fundus examination.

Potential periocular, ocular, and extraocular complications of herpes zoster ophthalmicus are summarised in the table on bmj.com. The commonest complications are conjunctivitis, corneal pseudo-dendrites, disciform keratitis, and uveitis. The most important complications that must not be missed are uveitis and acute retinal necrosis.[9] Uveitis causes pain and photophobia without any discharge. Acute retinal necrosis causes pain with loss of vision and/or floaters. Both conditions can only be confirmed on slit-lamp examination.

Most of the ocular complications can be managed in the outpatient setting, except for acute retinal necrosis—the most serious and blinding complication—which requires hospital admission for immediate intravenous and intravitreal antiviral treatment.

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HIV pre-exposure prophylaxis (PrEP)

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CPD READING
0.5 HOURS

A 22 year old man attends a sexual health clinic. Six months previously, he completed a course of HIV post-exposure prophylaxis for anal receptive intercourse without a condom. Since then, he reports six anal receptive sexual exposures without a condom. He has been treated at another sexual health clinic for rectal gonorrhoea. He asks if you could prescribe him PrEP.

HIV pre-exposure prophylaxis (PrEP) is the use of HIV antiretroviral medicines in people without HIV to prevent infection. When taken correctly, PrEP has been shown to reduce the risk of HIV infection in numerous populations, including young women, men who have sex with men, HIV uninfected members of sero-discordant couples, and injecting drug users.[1-3] Based on this evidence, PrEP is recommended for people considered at high risk of acquiring HIV. However, availability of PrEP and access to expert advice and counselling about its use vary globally. For example, in England it is only available as part of a clinical trial, whereas it is available in the rest of the UK at sexual health clinics. Awareness of PrEP among at-risk groups is growing, and availability of the treatment is becoming more widespread; therefore generalists—as well as those working in sexual health services—require an awareness of the indications, efficacy, use, and potential harms of PrEP.

WHAT YOU NEED TO KNOW

- PrEP is an effective and proactive form of HIV prevention, in which people who are HIV negative and have active and substantial risk factors for HIV infection take antiretroviral medication to prevent infection
- Efficacy of PrEP is highly dependent on adherence
- PrEP does not protect against other sexually transmitted infections such chlamydia, gonorrhoea, and syphilis, therefore additional methods of protection (eg, condoms) are necessary

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

Two patients at our clinic who were taking PrEP for HIV prevention provided insight for this article. Both are men who have sex with men. Both were asked how PrEP changed their views towards sex, and to provide practical PrEP tips. The patients noted that PrEP provided them with greater autonomy over their sexual health and reduced fear with sexual activity. One patient mentioned that he preferred daily compared to on demand PrEP as it was much easier to remember to take his tablets.

What you should cover

Identify risk of HIV

Ask the patient about known or potential HIV exposures in the previous six months, particularly sexual exposures or injecting drug use. The box summarises high risk groups in whom PrEP is recommended. Further discussion of risk assessment can be found on bmj.com.

Indications for PrEP[1 2]

PrEP is recommended for

- men who are HIV negative who have condomless sex with men of unknown HIV serostatus, or with men who do not have evidence of a persistently suppressed HIV plasma viral load (<200 copies/mL) for at least six months
- transgender individuals who are HIV negative and engage in anal sex without a condom
- individuals who are HIV negative and engage in sex without a condom with those known to be HIV positive who do not have a suppressed HIV plasma viral load (<200 copies/mL) for at least six months.

Consider PrEP on a case by case basis in individuals who are HIV negative and

- engage in sex without a condom with partners of unknown HIV status, particularly in areas with a high HIV prevalence (eg, southern Africa)
- in the past 6-12 months have had bacterial sexually transmitted infections, hepatitis C infection, or have used HIV post-exposure prophylaxis, with anticipated future high risk sexual behaviour
- inject drugs and share drug injection paraphernalia
- have partners of unknown HIV serostatus and may not be able to use condoms (eg, because of poverty, threat of violence) with sexual partners—for example, in some commercial sex workers.

EDUCATION INTO PRACTICE

- Think about the last few patients you saw for HIV post-exposure prophylaxis. How many had ongoing risk factors for HIV acquisition and would have been good candidates for PrEP?
- How many of your patients currently taking PrEP (either daily or on demand) have indications to continue, based on their current risk of HIV infection?

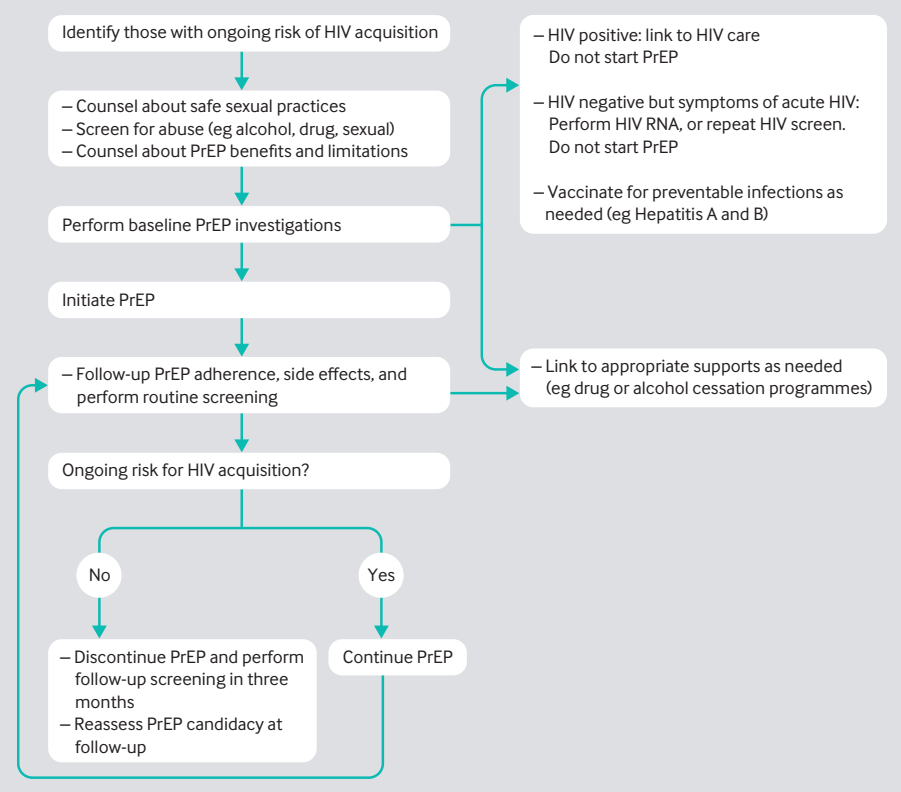
What you should do

If PrEP is indicated based on your assessment of the person's risk of acquiring HIV, order the necessary baseline tests. Explain the risks, benefits, and logistics of taking PrEP to help the person make an informed decision (figure).

Test for chlamydia, syphilis, and gonorrhoea, renal and liver function, plus hepatitis A, B, and C

Baseline tests

- Before starting PrEP, exclude HIV infection, preferably using a fourth generation laboratory assay (a test for both HIV antibodies and p24 antigen). In situations where acute HIV is suspected (ie, infection within the past 2-3 weeks), perform an HIV RNA nucleic acid test. If the HIV RNA test is not available or the exposure was within the last 7-10 days (within the window period for detection of HIV with a viral load assay), guidelines recommend repeat testing with a fourth generation assay in 1-4 weeks.[1 3] Withhold PrEP in scenarios where HIV cannot be excluded, because the regimen used for PrEP is inadequate for treatment of HIV infection, and might lead to drug resistance.
- Test for chlamydia, syphilis, and gonorrhoea (urine nucleic acid amplification test, rectal and pharyngeal culture or nucleic acid amplification tests, if indicated by exposure), renal and liver function, and hepatitis A, B, and C.
- Offer vaccination against hepatitis A and B and human papillomavirus in line with local guidelines. The tenofovir disoproxil fumarate plus emtricitabine (TDF/FTC) combination tablet is active against hepatitis B infection, so there is potential for hepatitis B reactivation should PrEP be discontinued. Use PrEP with caution in people with active hepatitis B; episodic or "on-demand" PrEP is not recommended in this group.[1 3]
- Offer a pregnancy test in women. PrEP is believed to be safe and effective in pregnancy and during breast feeding.[5] However, discuss the potential risks of taking PrEP in pregnant women, those who could become pregnant, or who are breast feeding, to facilitate informed decision making.[2]



Decision making flowchart to guide PrEP initiation and follow-up care

Discuss PrEP options

Oral PrEP is recommended as a two drug regimen of TDF and FTC, co-formulated as a single pill, and taken as one pill once daily.[1-6] Data show very high efficacy of daily PrEP with TDF/FTC for preventing HIV acquisition among those with moderate to high adherence. In a systematic review and meta-analysis involving 18 studies (including randomised control trials, open label extension studies, and demonstration studies), PrEP afforded a 70% relative risk reduction in HIV infection versus placebo in those with adherence levels of 70% or more.[7] In those with low adherence rates (<40%), no difference in HIV infection rates versus placebo was found. A real world observational study of PrEP use in San Francisco found there were no new HIV infections from 657 people initiating PrEP over a mean follow-up of 7.2 months.[8]

On demand PrEP is an alternative to once daily PrEP in men who have sex with men (MSM). On demand PrEP has been shown to reduce HIV transmission among MSM who can predict the timing of high risk exposures.[6] It involves taking two tablets of TDF/FTC 2-24 hours before sex, then a subsequent tablet of TDF/FTC 24 hours after sex, and then again 48 hours after sex.[6]

Potential harms

Tenofovir disoproxil fumarate (TDF), one of the two components of PrEP, is contraindicated in those with glomerular filtration rates less than 60 mL/min and is associated with loss of bone mineral density.[1-3]

Drug resistance may develop in those who initiate PrEP with unrecognised HIV infection.[11]

When to start PrEP

Evidence is limited for the time to maximal protection once PrEP is started, and there is some variation between guidelines.[1-3] UK guidelines note that, for anal exposures, taking the first dose of PrEP 2-24 hours before exposure is appropriate if two tablets (a double dose) of TDF/FTC are taken.

For all other sex, or in the context of injecting drug use, seven days of single dose once daily TDF/FTC is recommended before exposure. People taking PrEP are asked to follow up every three months.[1-3]

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How to get started in quality improvement

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Engaging in quality improvement enables clinicians to acquire and apply important professional capabilities[7], such as managing complexity and human factors.[1] For clinical trainees, it is a chance to improve care[9]; develop leadership, presentation, and time management skills[10]; and build relationships with colleagues in organisations that they have recently joined.[11] For more experienced clinicians, it is an opportunity to address longstanding concerns about the way in which care processes and systems are delivered, and to strengthen their leadership for improvement skills.[12]

This article describes the skills, knowledge, and support needed to get started in quality improvement and deliver effective interventions.

WHAT YOU NEED TO KNOW

- Participation in quality improvement can help clinicians and trainees improve care together and develop important professional skills
- Effective quality improvement relies on collaborative working with colleagues and patients and the use of a structured method
- Enthusiasm, perseverance, good project management skills, and a willingness to explain your project to others and seek their support are key skills

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

The authors have drawn on their experience both in partnering with patients in the design and delivery of multiple quality improvement activities and in participating in the Academy of Medical Royal Colleges Training for Better Outcomes Task and Finish Group,[1] in which patients were involved at every step. Patients were not directly involved in writing this article.

What skills do you need?

Enthusiasm, optimism, curiosity, and perseverance are critical in getting started and then in helping you to deal with the challenges you will inevitably face.

Relational skills are also vital. At its best, quality improvement is a team activity. The ability to collaborate with different people, including patients, is vital for a project to be successful.[17 18] You need to be willing to reach out to groups of people that you may not have worked with before, and to value their ideas.[19]

Learning how systems work and how to manage complexity is another core skill.[20] An ability to translate quality improvement approaches and methods into practice, coupled with good project and time management skills, will help you design and implement a robust project plan.[27]

Equally important is an understanding of the measurement for improvement model, which involves the gradual refinement of your intervention based on repeated tests of change. The aim is to discover how to make your intervention work in your setting, rather than to prove it works, so useful data, not perfect data, are needed.[28 29] Some experience of data collection and analysis methods (including statistical analysis tools, such as run charts and statistical process control) is useful, but these will develop with increasing experience.[30 31]

Most importantly, you need to enjoy the experience. It is rare that a clinician can institute real, tangible change, but with quality improvement this is a real possibility, which is both empowering and satisfying.

DEFINING QUALITY IMPROVEMENT[1]

Quality improvement aims to make a difference to patients by improving safety, effectiveness, and experience of care by:

- Using understanding of our complex healthcare environment
- Applying a systematic approach
- Designing, testing, and implementing changes using real time measurement for improvement

How do you get started?

The first step is to recruit your improvement team. Start with colleagues and patients,[32] but also try to bring in people from other professions, including non-clinical staff. Find a colleague experienced in quality improvement who is willing to mentor you.

Next, identify a problem collaboratively with your team. Use data to help with this (eg, clinical audits, registries of data on patients' experiences and outcomes, and learning from incidents and complaints). Take time to understand what might be causing the problem. There are different techniques to help you (process mapping, five whys, appreciative inquiry).[35-37] Think about the contextual factors that are contributing to the problem (eg, the structure, culture, politics, capabilities, and resources of your organisation) .

Next, develop your aim using the SMART framework: Specific (S), Measurable (M), Achievable (A), Realistic (R), and Timely (T).[38] This allows you to assess if your original idea is too ambitious. Aligning your improvement aim with the priorities of the organisation where you work will help you to get management and executive support.[39]

Having done this, map those stakeholders who might be affected by your intervention and work out which ones you need to approach, and how to sell it to them.[40] Developing an "elevator pitch" based on your aims is a useful technique to persuade others.[38]

The intervention will not be perfect first time. Expect a series of iterative changes in response to false starts and obstacles. Measuring the impact of your intervention will enable you to refine it.[28]

Right from the start, think about how improvement will be embedded. Attention to sustainability will mean that when you move to your next job your improvement efforts, and those of others, and the impact you have collectively achieved will not be lost.[41 42]

CPD READING

0.5 HOURS

What support is needed?

You need support from both your organisation and experienced colleagues to translate your skills into practice.

- Find the mentor or supervisor who will help identify opportunities and support you
- Use planning and reporting tools to help manage your project, such as those in NHS Improvement's project management framework[27]
- Contact your local quality improvement or clinical audit team, who may be a source of support and useful development resource
- Determine how you might access (or develop your own) local peer-to-peer support networks, coaching, and wider improvement networks (eg, NHS networks; Q network[43 44])
- Use quality improvement e-learning platforms such as those provided by Health Education England or NHS Education for Scotland to build your knowledge[45 46]
- Learn through feedback and assessment of your project (eg, via the QIPAT tool[47] or a multi-source and project feedback tool).[48 49]

Quality improvement approaches allow clinicians, working within a team, to identify an issue and implement interventions that can result in true beneficial change. Projects can be undertaken in fields that interest clinicians and give them transferable skills in communication, leadership, project management, team working, and clinical governance.

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EDUCATION INTO PRACTICE

In designing your next quality improvement project:

- What will you do to ensure that you understand the problem you are trying to solve?
- How will you involve your colleagues and patients in your project and gain the support of managers and senior staff?
- What steps will you take right from the start to ensure that any improvements made are sustained?

Quality improvement in action: three doctors and a medical student talk about the challenges and practicalities of quality improvement

Four interviews by Laura Nunez-Mulder with people who have experience in quality improvement

The student "I fit the project around my studies by working on it in small chunks here and there"

Alex Thompson, medical student at the University of Cambridge, is in the early stages of his first quality improvement project

We are aiming to improve identification and early diagnosis of aortic dissections in our hospital. Our supervising consultant suspects that the threshold for organising computed tomography angiography for a suspected aortic dissection is too high, so to start with, my student colleague and I are finding out what proportion of CT angiograms result in a diagnosis of aortic dissection.I fit the project around my studies by working on it in small chunks here and there. You have to be very self motivated to see a project through to the end.

Research fellow "Make sure the project is sufficiently narrow to enable timely delivery"

Anna Olsson-Brown, research fellow at the University of Liverpool, engaged i n quality improvement in her F1 year, and has since supported junior doctors to do the same. Her full account can be found on bmj.com/blogs

Working in the emergency department after my F1 job in oncology, I noticed that the guidelines on neutropenic sepsis antibiotics were relatively unknown and even less frequently implemented. A colleague and I devised a neutropenic sepsis pathway for oncology patients in the emergency department including an alert label for blood tests. The pathway ran for six months and there was some initial improvement, but the benefit was not sustained after we left the department.

As an ST3, I mentored a junior doctor whose quality improvement project led to the introduction of a syringe driver prescription sticker that continues to be used to this day.

My top tips for those supporting trainees in quality improvement are:

- Make sure the project is sufficiently narrow to enable timely delivery
- Ensure regular evaluation to assess impact
- Support trainees to implement sustainable pathways that do not require their ongoing input.

Diabetes consultant "Even the projects that fail contain valuable lessons"

Amar Puttanna, consultant in diabetes and endocrinology at Good Hope Hospital, describes a project he carried out as a chief registrar of the Royal College of Physicians

The project of which I am proudest is a referral service we launched to review medication for patients with diabetes and dementia. We worked with practitioners on the older adult care ward, the acute medical unit, the frailty service, and the IT teams, and we promoted the project in newsletters at the trust and the Royal College of Physicians.

The success of the project depended on continuous promotion to raise awareness of the service because junior doctors move on frequently. Activity in our project reduced after I left the trust, though it is still ongoing and won a Quality in Care Award in November 2018.

Though this project was a success, not everything works. But even the projects that fail contain valuable lessons.

Palliative care consultant "Most challenging was figuring out the tools to get the right information from the data"

Mark Taubert, consultant in palliative medicine and honorary senior lecturer for Cardiff University School of Medicine, launched the TalkCPR project

Speaking to people with expertise in quality improvement helped me to narrow my focus to one question: "Can videos be used to inform both staff and patients/carers about cardiopulmonary resuscitation and its risks in palliative illness?" With my team I created and evaluated TalkCPR, an online resource that has gone on to win awards (talkcpr.wales).

The most challenging aspect was figuring out which tools might get the right information from any data I collected. I enrolled on a Silver Improving Quality Together course and joined the Welsh Bevan Commission, where I learned useful techniques such as multiple PDSA (plan, do, study, act) cycles, driver diagrams, and fishbone diagrams.

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BMJ CHARITY APPEAL

Dehumanising migrants dehumanises us all

In a debate over the use Border Force ships to rescue people crossing the English Channel in dinghies, Sajid Javid stood on the dock in Dover and said: "I want to send a very strong signal to people who do think about making this journey—we will do everything we can to make sure it is not a success."

As this kind of speech becomes normalised and tolerated, the NHS is expected to follow, applying judgments and denying care to those who are deemed less deserving. Framing a small number of people as a crisis defines them as a threat that needs to be tackled, rather than acknowledging that these are highly vulnerable people. It raises questions about whether they should receive help, whether they should be rescued at all. Referring to people only as "migrants," rather than children, or just "minors," removes any opportunity for empathy and ignores the real reasons they are fleeing to the UK.

Staff at Doctors of the World's clinics witness the impact of this rhetoric daily, with vulnerable people being denied healthcare—for example, those who have been refused asylum or have no fixed address. The NHS migrant and visitor charging programme means that a tiny—but still human—proportion of the population are no longer able to see a doctor or receive treatment as the rest of us can. Instead they are asked to provide paperwork that they don't have, prove their address (which they may not have), and pay money that they don't have. They are chased by debt collectors or simply turned away, with nowhere to go.

We hear stories of people unable to access the care they need—pregnant women who can't see a GP or a midwife, a woman with a lump in her breast who can't have a mammogram, the patient with psychosis who can't get past the emergency department reception to see a psychiatrist, the terminally ill man who is too unwell to return to his country of origin but is refused palliative care. These are all human beings living in the UK.

The government insists its intention is to recoup money from people who use the NHS when on a short term visit to the UK. Doctors of the World's patients aren't short term visitors—on average they've lived here for five years. Denying them treatment won't save substantial amounts of money. While Scotland and Wales have exempted refused asylum seekers from NHS charges, England has resolutely included them.

If we allow people to drown at sea or on our coasts, or withhold lifesaving healthcare, we risk turning our backs on the most vulnerable, as well as on the principles by which we provide healthcare. All of this undermines our humanity. Helping fellow human beings in their hour of need is why most doctors choose their profession.

Lucy Jones, director of programmes, Doctors of the World **LJones@doctorsoftheworld.org.uk**

Cite this as: *BMJ* 2019;364:l212

Doctors of the World clinic, Bethnal Green

CASE REVIEW

Acute maternal confusion and neonatal seizure postpartum

A 32 year old nulliparous woman underwent induction of labour with dinoprostone at 41+2 weeks' gestation. Her membranes were artificially ruptured after 24 hours and she requested an epidural before augmentation of labour. A litre of Hartmann's solution was administered simultaneously with the epidural to correct any epidural-induced hypotension. A synthetic oxytocin (syntocinon) infusion (10 units/50 mL in sodium chloride 0.9%) was started at 2 cm cervical dilatation. She remained on intravenous fluid throughout her labour, receiving a further litre of fluid six hours later. At 8 cm cervical dilatation, a persistent fetal bradycardia warranted an emergency caesarean section. Estimated blood loss was 830 mL and she received 2 L of fluid intra-operatively.

She gave birth to a 3975 g baby girl with Apgar scores of 9 at one minute and 10 at five minutes. The mother received 10 units of oxytocin to achieve adequate uterine tone. A continuous infusion of 40 units of syntocinon in a litre of Hartmann's solution was also administered over four hours as per hospital protocol.

At 4 hours of age, the baby had a tonic-clonic seizure lasting 40 seconds and the mother became acutely confused. The mother was clinically euvolaemic and computed tomography of the head was normal. Blood results are shown in the table.

It later transpired the mother had drunk more than 4 L of fluid during labour, in addition to the 4 L given intravenously.

Neonatal and maternal blood tests

Test	Result	Reference range
Neonatal serum sodium	118 mmol/L	132-145 mmol/L
Maternal serum sodium	124 mmol/L	132-145 mmol/L
Maternal serum potassium	3.4 mmol/L	3.5-5.0 mmol/L
Maternal serum osmolality	257 mOsm/kg	285-295 mOsmol/kg
Maternal urine osmolality	177 mOsm/kg	n/a

1 **What is the diagnosis?**

2 **What factors might contribute to the development of this condition intrapartum and postpartum?**

3 **How would you manage this condition?**

Submitted by Adam D Jakes, Jillian Lloyd, and Catherine Nelson-Piercy

Patient consent obtained.

Cite this as: *BMJ* 2019;364:k5399

If you would like to write a Case Review or Spot Diagnosis for Endgames, please see our author guidelines at http://bit.ly/29HCBAL and submit online at http://bit.ly/29yyGSx

answers

For extra material, including patient outcome, go to bmj.com/endgames

CASE REVIEW

Acute maternal confusion and neonatal seizure postpartum

1 What is the diagnosis?

Dilutional hyponatraemia resulting from increased total body water with little change in total sodium.

- Acute hyponatraemia (especially <125 mmol/L—profound hyponatraemia) can cause confusion and seizures resulting from brain cell oedema.
- Hyponatraemia can also cause neonatal seizures.
- Low serum osmolality with a normal or high urine osmolality in a euvolaemic patient is also consistent with dilutional hyponatraemia.

2 What factors might contribute to the development of this condition intrapartum and postpartum?

- Excessive oral fluid intake.
- Excessive intravenous fluid administration (notably hypotonic solutions).
- Prolonged labour.
- Caesarean section.
- Oxytocin boluses and infusion.

3 How would you manage this condition?

Request specialist input from obstetric medicine, internal medicine, and/or nephrology.

- Measure serum sodium if fluid balance is positive >1500 mL.
- Once serum hyponatraemia is identified, request serum and urine osmolalities.
- Chart the fluid balance and restrict fluid input to around 30 mL/hour.
- Measure serum sodium every 6 hours until it is >130 mmol/L. Avoid an increase ≥10 mmol/L during the first 24 hours and ≥8 mmol/L every 24 hours thereafter.

LEARNING POINT

Monitor fluid balance throughout labour in high risk women to prevent hyponatraemia. Discourage the use of excessive amounts of intravenous fluid and liberal oral fluid intake, and advise women to drink according to thirst. Consider measuring serum sodium if fluid balance is positive >1500 mL. The correct diagnosis and management of hyponatraemia with fluid restriction will result in most women making a spontaneous recovery.

CPD READING 0.5 HOURS

You can record CPD points for reading any article. We suggest half an hour to read and reflect on each.

LEARNING MODULE

Articles with a "learning module" logo have a linked BMJ Learning module at http://learning.bmj.com.

Paederus beetle dermatitis

A 25 year old woman woke with erythema, oedema, and painless, non-pruritic pustules around her right eye (figure), accompanied by tingling, conjunctival hyperaemia, and lesions on her neck and right auricle.

Allergic contact dermatitis was unlikely because the rash was unilateral, non-pruritic, and without wheals, and she had not been exposed to plants, insects, or new cosmetics. Negative Tzanck smear ruled out herpes virus infection.She was apyrexial and her full blood count was normal, making periocular cellulitis unlikely.

Using Karthikeyan and Kumar's diagnostic criteria, she was diagnosed with *Paederus* beetle dermatitis. This irritant contact dermatitis, caused by paederine toxins, occurs mainly in tropical and subtropical regions within 24 hours of crushing *Paederus* (rove) beetles on the skin—often accidentally.

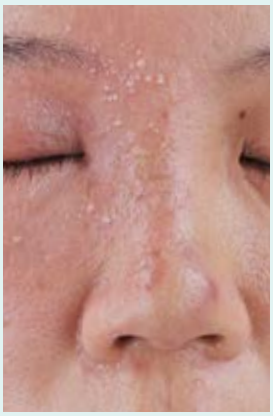
Periorbital *Paederus* dermatitis (Nairobi eye) occurs in approximately 10% of *Paederus* dermatitis cases.

The condition is managed according to severity, with wet dressings, topical or systemic antibiotics or steroids, antihistamines, and non-steroidal anti-inflammatory drugs.

Yi Zhu; Yi-Ming Fan (ymfan1963@163.com), Department of Dermatology, Affiliated Hospital of Guangdong Medical University, Guangdong, China

Patient consent obtained.

Cite this as: *BMJ* 2019;364:k5369



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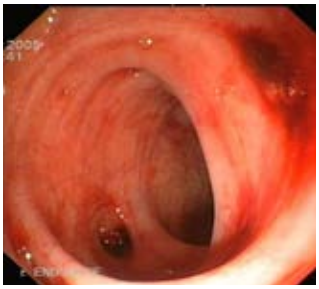
Lower gastrointestinal bleeds



Scoring systems for ill people are usually designed to recognise those who need investigation and intervention most urgently. A system for evaluating lower gastrointestinal bleeding takes the opposite approach, developing a risk score to identify patients who can be managed safely without hospital admission (*Scand J Gastroenterol*). The score depends on blood pressure, pulse rate, haemoglobin level, and presence or absence of treatment with anticoagulants or antiplatelet drugs. It still needs to be evaluated prospectively but, on a test dataset, it misclassified only 2% of low risk patients.

Syncope

Syncope implies transient loss of consciousness but near syncope—symptoms of light headedness that don't result in loss of consciousness—has similar causes and should be taken equally seriously. Among a large series of cases collected from emergency departments in the US, 30 day rates of major events (such as death, need for cardiopulmonary resuscitation, life threatening arrhythmias, myocardial infarction, and aortic dissection) were as high in people presenting with near syncopal symptoms as they were in those who had experienced complete loss of consciousness (*Ann Emerg Med*).

Food allergies

Roughly 1 in 5 adults in the US believes they are allergic to at least one food, according to a nationwide survey. Cross checked against symptoms such as urticaria or wheezing that might plausibly indicate an IgE mediated reaction, the proportion fell to about 1 in 10. Among those with convincing symptoms of food allergy, about half reported that they had developed the allergy as an adult (*JAMA Netw Open*). The commonest allergies were to shellfish, milk, and peanuts.

Liquid biopsy

The prospect of getting a diagnosis from a peripheral blood sample in a case of suspected cancer may be closer. Instead of trying to identify mutations in circulating tumour cells—a method which has a disappointingly low sensitivity—the new technique explored the methylation patterns of circulating tumour DNA (*Nature*). These methylation patterns turned out to match the patterns of methylation in the tissue of the primary tumour. When tested on a panel of plasma samples from patients with different types of cancer, this approach gave accurate diagnostic findings, even in people whose disease was at an early stage.

Sleeping for adolescents

Adolescents are notorious for staying up late in the evening and getting up late in the morning. It's probably something to do with changes in circadian rhythms as the brain matures. Rather than fight against these biologically determined rhythms, the Seattle School District chose to delay the start of the secondary school day by nearly an hour (*Sci Adv*). A before and after study found that the average duration of sleep among students increased by half an hour. Student grades and attendance rates improved too.

Cite this as: *BMJ* 2019;364:l112