education

FROM THE JOURNALS Edited highlights of weekly research reviews

LLMs not fit to practise

Reviewing 360° assessment feedback from colleagues can be nerve wracking, particularly if you had to ask someone who you know doesn't think much of your clinical skills (or just doesn't like you).

If large language model (LLM) AI diagnosticians had to be revalidated and they asked the authors of a new diagnostic accuracy study in *Nature Medicine*, they might find themselves in trouble. These authors conclude that "current state-of-the-art LLMs do not accurately diagnose patients across all pathologies (performing significantly worse than physicians), follow neither diagnostic nor treatment guidelines, and cannot interpret laboratory results, thus posing a serious risk to the health of patients." Not only are LLMs poor at making a diagnosis, "they cannot be easily integrated into existing workflows because they often fail to follow instructions." Ouch!

▶ *Nat Med* doi:10.1038/s41591-024-03097-1

Benefits of intensive blood pressure control

How low should you go if you have hypertension and a high cardiovascular risk? We've had three major trials already (ACCORD, RESPECT, and SPRINT), and now there's ESPRIT.

This open-label trial recruited over 11 000 people in China who had hypertension and high cardiovascular risk. They were randomised to intensive blood pressure control (targeting a systolic blood pressure of <120 mm Hg) or a standard systolic blood pressure target of 140 mm Hg. After a median follow up of 3.4 years, intensive blood pressure targets led to slightly lower rates of the primary endpoint of myocardial infarction, revascularisation, hospital admission for heart failure, stroke, or death from cardiovascular causes: 9.7% versus 11.1% (hazard ratio 0.88, 95% confidence interval 0.78 to 0.99). There was no difference in serious adverse events between the groups, apart from a small increase in syncope in the intensive blood pressure control group (0.4% *v* 0.1%).

The generalisability of the major trials of intensive blood pressure control have been discussed at length. ESPRIT excluded anyone with a 1 minute standing systolic blood pressure of <110 mm Hg and used supervised, office based blood pressure readings (where the average of three blood pressure readings, each a minute apart, and after a quiet rest for at least 5 minutes, were used) in contrast to the unsupervised blood pressure readings done in the SPRINT study and increasingly in clinical practice.

▶ *Lancet* doi:10.1016/S0140-6736(24)01028-6

Kidney function in extreme heat

It's common to see patients unwell with acute kidney injury during heat waves. Researchers tested the effect of extreme heat on kidney function by testing blood samples from healthy volunteers who went into a chamber heated to 47°C and 15% humidity (sauna) or 40% humidity (hot yoga studio) and did bouts of light activity over a three hour period. In the hot dry setting the volunteers had increases in blood markers of kidney function (creatinine and cystatin C), which were more marked in the older (>65 years old) volunteers. In the hot humid conditions, however, kidney function markers didn't significantly change.

▶ *JAMA* doi:10.1001/jama.2024.9845

Death rates and ECG screening

In Japan all employees over the age of 35 years are offered annual health screening, including an electrocardiogram (ECG). A cohort study examined the link between abnormalities in these screening ECGs and all-cause death and hospital admission due to cardiovascular disease. This composite outcome occurred more often over a median five year follow-up period in people with major abnormalities on their ECG than those with no abnormalities (adjusted hazard ratio 1.96, 95% CI 1.92 to 2.02). The study doesn't tell us whether the higher risks are due to cardiac disease indicated by the abnormal ECGs or as a result of the interventions offered to investigate them, or how many of the abnormalities had an effective intervention.

▶ *JAMA Intern Med* doi:10.1001/jamainternmed.2024.2270

Weight gain with antidepressants

Weight gain is a common concern for people considering taking antidepressants. An observational cohort study in the US looked at the relative weight change of 183 118 people prescribed antidepressants between 2010 and 2019. Compared with those prescribed sertraline, greater weight gain (an average of up to 0.5 kg over 2 years) was found in those prescribed escitalopram, paroxetine, duloxetine, venlafaxine, or citalopram. Weight gain with fluoxetine was similar to that with sertraline, and the only antidepressant that seems to offer slightly lower levels of weight gain compared with sertraline was the one that isn't licensed for treatment of depression in the UK: bupropion.

▶ *Ann Intern Med* doi:10.7326/M23-2742

Tom Nolan, clinical editor, *The BMJ*, London; sessional GP, Surrey

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WHAT YOUR PATIENT IS THINKING

Looking for a helping hand

Aleksandra describes how she sought help to overcome alcohol dependence

CPD READING
0.5 HOURS

I used to enjoy drinking alcohol in social situations, and it was a regular part of my life. But following some family problems I started to drink more often, and my friends and family were worried. My son was upset to see me intoxicated, and it was painful to hear his criticism of me. As my relationships suffered, I was growing anxious and depressed, experiencing panic attacks.

I went to see my GP. I had physical symptoms such as shaking in my hands, and I thought it would be obvious that I was unwell. I told him I was drinking a bottle of wine on most days. My GP told me that I wasn't alone, and that a lot of people did similar. He advised that I should do what I could to cut back, or to stop drinking alcohol entirely if it was affecting me badly. But he didn't suggest how I might do that.

I felt frustrated and hopeless. I was aware of the serious health problems that alcohol caused and I knew I needed help to stop.

Reaching a crisis

I self-referred to a local alcohol and substance recovery service. They offered talking therapies, and I was relieved to have found help. But my drinking continued, and I resigned from my job because I believed it was causing me anxiety. Looking back now, I think it was the alcohol that was making the anxiety worse.

The covid-19 lockdown pushed my drinking to crisis levels. Whereas before I had abstained on occasional days, now I drank every day. When lockdown ended, I realised that I needed to get back to work, but I had lost the confidence to do so. I no longer trusted myself. If I opened a bottle of wine, I didn't know when I might stop drinking, and where I would end up.

Compassion

Through the local service, I referred myself for a detox programme. The waiting times for this were long, but support groups, online and in person, kept me going. A place on a programme became available, and a doctor phoned to let me know. When he called the following day to confirm some details, his first question was to ask, very gently, if I remembered our conversation from the previous day. I was shocked that he thought I might not remember, but the question was asked without judgment, and he listened patiently during our conversation. This helped counter some of the shame I felt about my situation.

During that period I sometimes had suicidal thoughts, and it was the kindness of a particular nurse that helped me. She undertook the routine tasks of taking my blood and monitoring my medication, but she also noticed my low mood and was able to ask questions about suicidal thoughts that people close to me might not have felt able to. She quickly understood the situation and sought my permission to call the GP on my behalf. As a result, my antidepressant medication was adjusted and the crisis eased. I am so grateful for her compassion.

I had good healthcare once I was "in the system" but it wasn't easy to make that first step to get help. I would like healthcare professionals to be aware and on the lookout for signs of addiction. There are some excellent places and resources for support, but a person at their lowest point might need a helping hand to find them.

Patient author

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ALISSA THALER

WHAT YOU NEED TO KNOW

- Discussing addiction can provoke feelings of discomfort or shame. Reassuring the person that you are not judging them can help
- Specialised support groups can be a helpful resource for people seeking support with addiction

EDUCATION INTO PRACTICE

- What might you suggest to someone who asks you for help to moderate or stop their alcohol intake?
- What local services can you recommend for someone seeking support?

PRACTICE POINTER

Peer support in chronic health conditions

Claire Reidy,[1,2] Emma Doble,[2,3] Aimee Robson,[4] Partha Kar[4,5,6,6,7]

Full author details on bmj.com

Correspondence to: C Reidy claire.reidy@phc.ox.ac.uk

CPD READING

0.5 HOURS

Most people living with a long term condition spend only a small fraction of their time with healthcare professionals. Someone with diabetes, for example, will spend three hours a year with a healthcare professional on average, and the remaining 8757 hours caring for themselves.[1] Considering this limited time, and that 40-80% of medical information provided in health consultations is forgotten immediately,[2] additional access to means of support could allow people to address issues not dealt with in traditional clinical settings.[3] Self-management alone can be tiring, isolating, overwhelming, and tough on mental health.

Peer support offers a valuable way for people with chronic health conditions to learn to live with and manage the complexities of their condition day to day, giving them the confidence, knowledge, and support to do this.[4,5] This article offers an overview of peer support, its place in long term condition management, and tips for discussing it with patients.

What is peer support?

Peer support is the connection of two or more people with shared lived experiences. It can take the shape of spontaneous or arranged one-to-one interactions, buddy programmes, or a group setting (table). Meetings can occur face to face (eg, coaching and information sharing), virtually (blogs or online communities, following tags or specific members of the community, or by accessing group talks or podcasts), or in formal groups (self-management education, semi-structured support groups, group consultations/clinics).

Peer support can be initiated through healthcare professionals or peers themselves, either informally or formally. Groups can be set up in a healthcare setting or community, through voluntary organisations such as charities, or through community networks.

WHAT YOU NEED TO KNOW

- Peer support can be particularly helpful at the point of diagnosis or during periods of transition in health or life stages
- Peer support can be accessed face to face, online, in clinical or non-clinical groups, or through activities
- Clinicians can collaborate with peer support groups by signposting patients to peer support, offering to attend peer support sessions, and helping with meetings

What impact can it have?

The varied and often informal nature of peer support means that specific outcomes can be difficult to capture in complex, real world settings, which can lead to inconsistent or context specific findings in the current evidence.[6-9] Our experience shows that peer support can have a positive effect on the management of a chronic condition.

Peer support is most often valuable to people with long term conditions, or their carers. Groups and connections can give members the opportunity to share the same frustrations and relate to each other's experiences, feelings, and concerns.[10,11] They can enable sharing of experiences from different stages of living with the condition (or caring for someone who has it), and those with newer diagnoses can share thoughts and concerns with people who have more experience of the condition.[6] This can help normalise their experience, allow shared learning, and reduce feelings of isolation. Peer support communities can enable people to find support and information by increasing awareness, connectivity, and motivation,[5,12] while those located online have the benefit of being available around the clock.

For people who have a chronic health condition, talking to others can provide access to clinical care and resources, mutual encouragement, accessibility, relatability, and ongoing informational, instrumental, and emotional support.[5-15] Support from peers can unlock opportunities to enhance healthcare provision, eg, through the provision of practical tips and examples to manage day-to-day challenges, and improving knowledge of the medical condition.[16,22] Support from peers can also help reduce depression, improve quality of life, and reduce levels of distress and anxiety for those experiencing mental health difficulties.[17,18] Further, this collective support, which encompasses beneficial emotional, practical and illness related "work"[6,19] may contribute to improved clinical outcomes for people living with a long term condition by ameliorating the effects of condition-related distress.[20]

Peer support can enable people to feel in control and supported, and can provide a perception of choice around which self-management practices to undertake.[20] A systematic review of randomised controlled trials found that telephone delivered self-management support for people with diabetes and vascular diseases, delivered by lay and peer support workers, significantly improved blood glucose levels and self-management behaviours.[21,22] The benefits of peer support extend to family carers,[11] and some studies have also shown that peer support can help clinicians meet the needs of underserved populations.[24,25]

Types of peer support

Peer support type	Pros	Cons	Essential components
One-to-one facilitated support including peer coaching, peer leadership	Facilitates shared learning, knowledge, and experience. Addresses confidence to manage health and wellbeing by building greater self-efficacy	Requires input of training and ongoing support for peer coaches	Coaching expertise, training, education
Technology enabled peer support, including synchronous support (telephone peer support, web chatrooms) and asynchronous (eg, virtual support groups, online communities)	Reduces barriers to access, reduces time commitments around travel to physical location. Support is often in real time and always available/accessible	Engagement can be inconsistent. Requires appropriate technology (eg, smartphone, computer) and IT literacy. Often requires high levels of engagement/time commitment by particular group members, eg, moderators	Trained or untrained facilitators or moderators. Easy-to-use interface
Peer led group self-management education	Clearly defined outcomes, high level of quality assurance for many programmes, can be generic, allowing people with different or multiple conditions to benefit	Requires high standards and time commitment to train facilitators	Delivered by trained facilitators with lived experience using evidence-based materials
Group consultations/ clinics	Allows people to hear questions asked/ answered that they may not feel able to ask, creates a shared purpose, enables health beliefs to be addressed	Requires high level of training and facilitation skills, and awareness of boundaries. Also, high level of administration to deliver	People with lived experience to feel their needs are central and their voices heard in managing their health

What are the challenges and how can we address them?

Misinformation and harms

Concerns about peer support networks are often centred around the potential for overly negative conversations, sharing of unhelpful or misleading information, and reinforcement of erroneous health beliefs.[14 26] Other concerns include the potential for lack of accountability, reliability, or credibility of information.[27-29] In our experience, however, while misinformation can sometimes occur in peer support, peers are often quick to call it out to ensure it is not accepted or spread. Moderators of groups are particularly active in doing this, and other group members commonly question any potential medical misinformation. Moderators are typically individuals who take responsibility for checking that the members of an online group are keeping within the rules of the group, such as ensuring that no medical advice will be given, and that product promotions will not be shared.

Use of social media to host peer support comes with concerns around misinformation and privacy. Having group moderators can encourage confidence about online support groups, for both clinicians and patients, and can help to mitigate the risk of harm from any misinformation. Many find using social media an accessible way to gain valuable support from peers and we have found many positive examples.

SUGARBUDDIES: AN EXAMPLE OF PEER SUPPORT

Sugarbuddies is an informal, peer led support group for people living with diabetes on the south coast of England. The group was launched in 2015 by a small collection of people living with diabetes and a parent of someone living with the condition. The group discussed the idea with a local clinician for support, and recruited other local clinicians and clinics to support setting up the network and letting people with diabetes know of its existence.

Format of the group—The group is based mainly online (through a closed Facebook group), but also arranges face-to-face meet ups which consist of walks, social meet ups, and events (such as a one day conference for people living with type 1 diabetes with a range of speakers covering technology, psychological wellbeing, and lived experiences of peers).

Group moderation—A small number of peers run group events and moderate the Facebook group. Moderators find that fellow peers usually correct any potential misinformation, or refer peers back to health professionals for specific advice.

Healthcare professional input and engagement—The group has good connections with the diabetes centres in the region, and those centres often let patients know about the group, either during structured education courses run by the clinics, or when the patient is starting a new diabetes technology such as an insulin pump. One clinic hosts a patient conference each year and Sugarbuddies presents at the conference to spread the word about the group. Healthcare professionals have also presented at these events.

While connections with healthcare professionals are strong, the online group does not have a healthcare professional presence (except for those also living with a form of diabetes). This is to encourage peers to feel comfortable talking honestly about their experiences of living with diabetes, or about the care that they are receiving.

Collaborating with clinicians

Peer support groups have been described as a movement of expert "patient-hood," which may be out of keeping with traditional medical roles.[6] Healthcare workers may be uncertain of the relevance of peer support, or have fears about professional responsibility from promoting peer support networks within clinical roles. Lack of attention to the emotional and psychological needs of patients, and fear of "creating problems for problems' sake" have also been reported as barriers to clinicians promoting these networks.[26-30]

Many people who are part of these support groups see peer support as a complementary addition to the care they receive from health professionals. In our experience, having collaboration between peers and clinicians can help facilitate peer support groups. Clinicians can offer clarification and assurance for specific health concerns, and support through open discussions about topics that arise in the group. This can create opportunities for clinicians to learn more about the things that matter to patients and allows members of the group to feel they are supported and heard, while building trust between clinicians and those with lived experience. For example, we have seen examples of clinicians engaging with groups and responding to needs, hosting online sessions for groups about particular topics or concerns that have arisen in the group (eg, managing sickness or travelling), or offering support from the NHS relating to self-management education, mental health, or different treatment options.[27 31] Clinicians can also support patients by providing a meeting space, facilitating engagement between patients who may wish to run a peer support group, and exploring how much involvement patients may want from the clinic or service, as well as the clinician's capacity to provide this support. In this context, clinicians and peer leaders should operate as equals, and be aware of any potential power imbalance.

How and when might peer support be suggested to patients?

Box 1 outlines when clinicians might consider discussing peer support with their patients. In particular, peer support may play a role when something new is introduced into a person's life, when needs can be notably heightened.[32] In these instances of "newness," peers can benefit from problem solving, practical tips, and reassessing illness experience and perspectives.[13 26] For example, in a peer buddy programme in the US, people living with diabetes who had just had a child were paired together to provide specific information, activities, and emotional support.[15]

Box 1 | When to consider discussing peer support

- New diagnosis
- New therapeutic health technology
- New medication or therapy
- Illness complication or progression
- Life events that require new or renewed knowledge, confidence, support, and resources (eg, pregnancy, attending university)
- Patient new to area
- Patient struggling with attending clinical appointments
- Patient distrust in traditional healthcare or health service
- Transitional groups (eg, adolescents)

Box 2 | Consultation tips for discussing peer support

- Use life events or times of importance (eg, a new diagnosis, starting university, pregnancy, etc) to introduce peer support as part of a person's care plan
- Explore the most accessible types of peer support (eg, online or in person)
- Share examples of peer support groups and the role they can play
- Ensure patients know that peer support groups are not to provide medical advice but more to focus on how to live well with their condition

Box 3 | Where to suggest patients may find peer support groups

- Social media (through hashtags on X, eg, #GBDOC; or Facebook groups)
- Charity networks of peer support groups (eg, Diabetes UK, Parkinson's UK, Terrence Higgins Trust, Macmillan Cancer Support)
- Local community centres
- Condition specific community or secondary care centres (if connected to groups in the local area)
- Social prescribing link workers in some GP surgeries

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

Authors CR and ED both live with type 1 diabetes. They were both involved in the conception, development, and writing of this article.

EDUCATION INTO PRACTICE

- What peer support groups or networks are available to your patients?
- When and how could you discuss peer support with patients?
- What prevents you from sharing information on peer support? How could you overcome obstacles to sharing?
- What education or support do you need to have these conversations with patients?

HOW THIS ARTICLE WAS CREATED

Authors worked together to compile academic, clinical, policymaking, and personal experience of engagement in peer support for people with chronic conditions, and compiled relevant literature to explore the topic. Observations from personal, clinical, and policy making perspectives were outlined to consider the relevance, key questions, and pointers to address for practice.

The value that peer support may bring to an individual varies according to their current circumstance, the stage of their journey, and what is important to them. When suggesting peer support, it can help to explain that there are different types available, recognising that preferences for online, group, or one-to-one interaction, as well as accessibility barriers, may be important factors for patients. For example, online peer support can create a space for anonymity for adolescents who feel embarrassment or anxiety about questions or interactions with healthcare professionals.[5 33] Tips for these consultations are given in box 2.

A good place to start for interested patients is with relevant charities (box 3), which often run or keep directories of peer support groups. Many GP practices have a social prescribing link worker who should have good knowledge of local peer support. Searching social media for key terms such as the condition name and peer support can also provide a good route into peer support networks. It can be helpful to have a short list of peer support resources to give your patient. Peer support may not be for everyone, but if patients have information on the peer support available they can make an informed decision on whether they'd like to engage with peers.

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WHAT YOUR PATIENT IS THINKING

Navigating breastfeeding through cancer treatment

Abi Rimmer explains the challenges she faced while trying to continue breastfeeding throughout cancer diagnosis and treatment

CPD READING
0.5 HOURS

When my daughter was around 3 months old, I had a sigmoidoscopy which revealed a tumour, suspected cancerous, in my rectum. Leaving my baby for the initial appointment felt like a huge upheaval. Little did I know what was to come.

That appointment was to be the start of my treatment journey for stage 3 colorectal cancer, and the start of my struggle to get my clinical team to understand they weren't just treating a single person. My daughter and I were a package, not least because I was breastfeeding.

Just stop for 48 hours

Every time I received an appointment letter for a colonoscopy, an MRI, CT, or PET scan, I had to call the specialist cancer nurses to try to find out whether it was safe to breastfeed afterwards. They often wouldn't know, and I'd be left to battle with the hospital switchboard for hours, desperately trying to reach the right department, the right person, who might.

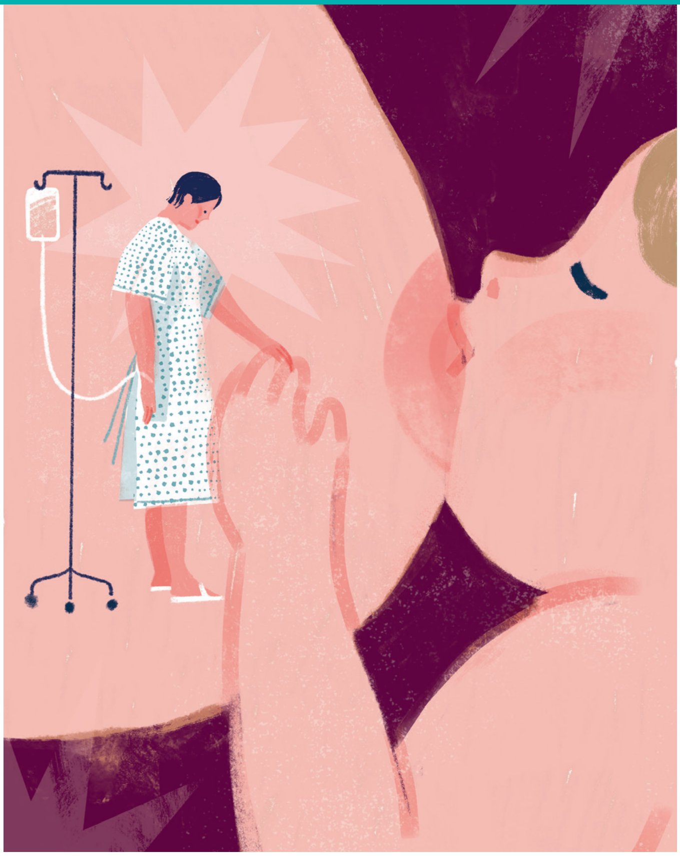
When I did find someone to ask, the blanket advice was invariably to stop breastfeeding for 48 hours afterwards. When you're breastfeeding, stopping for any length of time can be physically and emotionally distressing for you and your child. Two whole days of not breastfeeding is a long time. To add insult to injury, I often found—from the wonderful Breastfeeding Network's "Drugs in Breastmilk" fact sheets—that this advice was wrong.

WHAT YOU NEED TO KNOW

- When treating a new mother, consider the needs of the mother and baby as a whole, including breastfeeding support
- The breastfeeding network drug fact sheet offers advice for breastfeeding in relation to treatments and investigations
- If a mother has recently stopped breastfeeding, check that any medications you prescribe do not promote lactation

EDUCATION IN PRACTICE

- When might you create a plan to support a mother to continue breastfeeding throughout her treatment or hospital stay?
- What information or resources could you share?
- How could you support a mother who has to be separated from her baby during treatment?



ALISSA THALER

Breastfeeding around surgeries

I had three abdominal operations during the first year of my daughter's life, and breastfed after all of them. This was not an easy feat. After each operation I stayed in hospital for at least one night. My daughter wasn't allowed to visit me on the wards for her own safety. The breastfeeding network recommends that if a mother is separated from her baby for any length of time postoperatively then she needs access to a breast pump and a means to store the milk safely.

Unfortunately, no one from my team ever asked me how they could support my breastfeeding postoperatively. I took my own breast pump to the hospital and pumped both before and after the operations. Most of the milk was thrown away because of a lack of appropriate storage, which at the time felt extremely upsetting. I wish that someone had spent time creating a plan with me on how I could best manage my wish to continue breastfeeding.

The necessary evil of stopping

Chemotherapy eventually drew to an end my journey as a breastfeeding cancer patient. This made me very sad. I felt that the decision of when I stopped breastfeeding my child had been taken away from me. Although it was a necessary evil, it would have helped to have had a discussion about it with my medical team, or been signposted to services that could help me through the process. Things were made additionally difficult when I was prescribed domperidone to deal with the nausea caused by the chemotherapy. When my milk supply failed to dry up I realised that this medication might be to blame.

On many occasions during my treatment, I was asked (as a distraction) what I would be doing if I wasn't in hospital that day. My answer was always that I would be looking after my baby. Yet I felt that no one thought about what being separated from my young baby meant for me, or how they might be able to help me through this incredibly difficult time.

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PRACTICE POINTER

Acute painful crisis in adults with sickle cell disease

Kenneth S Charles,[1] Melissa Friday,[2] Edlin Rochford[3]

Full author details on bmj.com

Correspondence to: K S Charles kenneth.charles@sta.uwi.edu

CPD READING

0.5 HOURS

Sickle cell disease (SCD) is a multisystem disease that shortens life, and acute painful crisis is the hallmark of the condition. The clinical course is usually one of well compensated chronic anaemia interspersed with episodes of pain.[1] With advances such as hydroxyurea therapy, chronic transfusion programmes, and stem cell transplantation, the life expectancy of patients in high income countries has risen from the mid 40s in the 1980s to the late 50s today.[2] Clinicians working in primary and secondary care are therefore more likely to encounter patients with sickle cell disease and manage acute painful crises.

This article aims to help readers identify and assess patients with suspected acute painful crisis, and how to recognise and manage the complication of acute chest syndrome, optimise management in the inpatient and outpatient settings, and deliver care compassionately.

What is sickle cell disease?

SCD is a disorder of the β globin chain of haemoglobin. Patients with SCD produce haemoglobin S (HbS) in which valine replaces glutamic acid as the amino acid at position 6 of the β chain of HbA. High HbS concentrations shortens red cell survival and cause a reduction in haemoglobin concentration (chronic anaemia). Oxygen desaturation of HbS results in deformation of the red cell from discoid and pliable to sickle shaped and rigid (sickling).

What is acute painful crisis?

An acute painful crisis, also commonly referred to as vaso-occlusive crisis, is an episode of pain arising in deeper structures such as bones, joints, tendons, and muscles that is induced by sickling. The most common sites of pain onset are the back or trunk, and pain may then radiate to the limbs. In a longitudinal cohort survey of 308 adult patients with SCD in the US, the lower back and lower limbs (knee, shin, hip) were the most frequently reported pain sites.[10]

The frequency and severity of acute painful crises vary across patients substantially. Some patients experience them daily, weekly, or monthly from infancy, whereas others live to adulthood without experiencing severe episodes. However, acute painful crisis remains the most common reason for patients with SCD being admitted to hospital, with estimates ranging from 50% from a recent analysis of hospital episode statistics in England[11] to an older estimate of 95% from a single centre US retrospective cohort study.[12]

Acute painful crises are typically provoked by triggers such as changes in temperature (winter/cold temperatures), fever, infection, dehydration, increased physical activity, and emotional stress, but there may be no identifiable precipitant.[13]

How do patients present?

Patients with acute painful crisis may present from home to their general practitioner, hospital based clinic, or, most commonly, the emergency department. Patients with SCD admitted to hospital for another reason may also develop acute painful crisis triggered by the physical and mental effects of being in hospital.[16]

Pain ranges from mild to severe in intensity. It is often reported to be felt in deep tissues and is often central (chest, back, or trunk) with radiation to the limbs. Duration is usually a few hours to days, but in some cases, it may persist for weeks. Patients may recognise acute painful crisis because of a characteristic pattern that is self-identifiable as "crisis pain," and we recommend asking whether they have experienced this type of pain before. In the box, a patient with SCD describes her experience with acute painful crises.

Differentiating pain caused by acute painful crisis (irreversible sickling of cells leading to ischaemia) from that of avascular necrosis (irreversible sickled cells leading to infarction) is difficult. In our experience, pain is usually gradual and longer lasting (for more than six months continuously) in chronic avascular necrosis.

WHAT YOU NEED TO KNOW

- Pain in people of Asian, African, Caribbean, Latin American, or Middle Eastern ancestry could be related to acute painful crisis of sickle cell disease
- The back and trunk are commonly affected and pain may then radiate to the limbs
- Crises are often severe, and require strong analgesia for symptom relief
- Consider the complication of acute chest syndrome in patients with fever and respiratory signs and symptoms

Patient perspective

It's aptly named: crisis. It's physically painful, frightening, and mentally debilitating. It's sudden, crippling, and merciless. It's confusing to others.

What does a crisis feel like? It depends on where the pain is and it can begin anywhere. I've had crises in my knee, hip, waist, stomach, elbow, and shoulder, one spot at a time, or in all of those at the same time.

How does a crisis begin? I have no warning. I'd go to sleep and wake up with a full blown crisis going on in my body. I'd go into an air conditioned room and come out in crippling pain. I'd go to the beach and go for a swim and I'd be lifted out of the water in pain.

Once the pain starts, it can last for days and sometimes weeks. Everything inside me and around me is in crisis. I have had friends question if I was faking my sudden change. There's no stopping until I'm given strong medication.

Sometimes, I fall asleep pain-free and wake up screaming and unable to walk because my leg joints won't move. Other times my stomach feels as if it is turning hard and my chest feels as if I am suffocating. Just thinking about it has me wondering, how could I have survived it so many times?

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

The patient who coauthored this article is a communications teacher with a 53 year history of sickle cell pain, a life threatening episode of acute chest syndrome, and the life transforming experience of hydroxyurea therapy. Having family members with sickle cell disease, her lived experience helped shape the paper with respect to the various interactions between patient and health service. She also reviewed the content for relevance to patients and sensitivity around communication.

EDUCATION INTO PRACTICE

- In your setting, how often do patients with SCD present with acute painful crisis?
- How might you care for a patient with SCD who presents with pain acutely?

How to assess a patient with suspected crisis

Assessing a patient in suspected acute painful crisis requires balancing empathy with speed and thoroughness. Patients are often in severe discomfort and under the sedative influence of analgesia. In the table (see bmj.com), we outline questions to ask patients when taking a focused history, which should not delay offering pain relief. Investigations and treatment-specific information may be available on an individualised plan on their digital or paper health record. Alternatively, it may be helpful to contact their haematology team.

A validated or locally derived pain assessment tool can help with initial pain assessment. The visual analogue tool, for example, is useful for quickly assessing the intensity, distribution, and evolution of pain to guide titration of analgesia and discharge planning. However, use of tools is limited by the multifactorial nature of pain, which means it can be experienced in the absence of physical signs such as tachycardia, making assessment largely subjective.[17]

Full systemic examination, and, in particular, respiratory and abdominal examinations, might elicit positive findings that suggest an alternative explanation for pain. Assess for signs and symptoms of a precipitating cause, including focal or systemic infection. Patients may be systemically unwell and are at risk of sudden decompensation. We therefore recommend regular observations of temperature, blood pressure, pulse rate, respiratory rate, and oxygen saturation, and early reassessment if there is sudden or marked deterioration.

Common differential diagnoses that may coexist, precipitate crisis, or present with features similar to crisis include arthritis, osteomyelitis, myocardial infarction, pulmonary embolism, cholecystitis, pyelonephritis, appendicitis, ruptured viscus, and peptic ulcer disease. Consider the complication of acute chest syndrome in all patients with fever, respiratory symptoms, or positive respiratory signs on examination.[13]

First line blood investigations include complete blood count, urea, creatinine, and electrolytes at a minimum. Depending on local protocol, this may extend to tests of liver function, C reactive protein, reticulocytes, sickle haemoglobin percentage, and blood group and save.

Radiological investigations during acute painful crisis should be guided by clinical and laboratory findings. For example, a plain chest radiograph may be required to assess for pulmonary infiltrates in patients with fever, cough, chest pain, or difficulty breathing. Abdominal radiograph or ultrasound may be indicated if the patient complains of atypical abdominal pain, which may be secondary to renal or biliary tree calculi. Consider further radiological investigations, such as computed tomography or magnetic resonance imaging (guided by the multidisciplinary team), to exclude alternative diagnoses or detect complications of SCD, such as acute pulmonary embolism, abscess, osteomyelitis, or avascular necrosis.

Misdiagnosis of acute painful crisis could delay treatment, cause unnecessary pain, and prevent detection of life threatening complications. It may also undermine patient confidence and reduce the likelihood of care seeking for future episodes.[20] Conversely, unnecessary and excessive treatment for acute painful crisis could lead to opiate dependence.[21]

What are the principles of management?

Pain

Broadly, international guidelines from both high and low to middle income countries recommend self-management of mild attacks at home using acetaminophen (paracetamol), non-steroidal anti-inflammatory drugs including diclofenac and ibuprofen, or partial opioid agonists such as tramadol and dihydrocodeine.[13,23] Attendance at outpatient or hospital based settings for stronger analgesia requirements, such as regular or continuous use of opioids, is recommended if pain control is inadequate. Increasingly, patients with acute painful crisis are cared for in day case or observation units, reducing the need for hospital admission, and this is shown to be safe and cost effective.[24,25]

Typical analgesia regimens from high income countries such as the UK and US recommend liberal opiate use and modes of delivery, including patient controlled

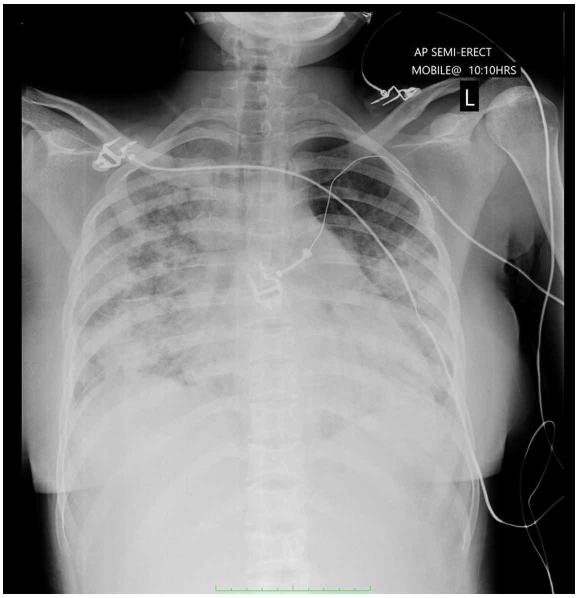

Fig 2 | Chest radiograph of a patient with acute chest syndrome, showing bilateral consolidation in the bases

analgesia, which require substantial resources for delivery and monitoring.[13 23] In low and middle income countries, such as Nigeria, India, Saudi Arabia, and in the Caribbean, guidelines follow similar principles.[14 26] However, delivery is often impeded by infrastructure, resources, and preferences of the health professional or patient.[27-29]

Use of pethidine (meperidine) for analgesia remains controversial as its active metabolite norpethidine is a neurostimulant that causes seizures at high doses.[30] Although its use is discouraged in high income countries, it remains widely used in several low and middle income countries.[14-29] Alternative opioids, such as submucosal fentanyl or oral oxycodone, are useful adjuncts or alternatives to conventional opiate therapy.[31] Adjunctive use of ketamine infusions can be useful for reducing opioid requirements and overcoming opioid tolerance. This injectable dissociative anaesthetic is a non-competitive antagonist at the N-methyl-D-aspartate receptor that provides pain relief and short term memory loss.[32]

Some of the most common complaints from patients presenting to hospital with acute painful crisis in high income countries include unacceptable delays in receiving analgesia, inadequate dosing, inappropriate choice of analgesia, and stigmatisation of behaviour as drug seeking.[33] In seeking to tackle these concerns, patients and support groups have been included in devising some national guidelines for acute painful crisis.[13 23] While opiate dependence and addiction are considered rare in some settings, health professionals' concerns about them may provoke suspicion and unwillingness to prescribe and administer them.[20]

Fluids

Despite the confirmed benefit of additional hydration to treat acute painful crisis, no randomised controlled trials inform duration of hydration, route of administration, and choice of fluid. A US retrospective cohort study of 157 episodes of acute painful crisis from 49 patients admitted to hospital showed that excessive fluid administration in the first 24 hours was associated with increased development of adverse events, including new oxygen requirement, aspiration, and acute kidney injury.[22] Hydration with isotonic fluid may worsen pain and precipitate acute chest syndrome by increasing intracellular HbS concentration.[34] In our local practice, we prescribe intravenous 5% dextrose to induce hyponatraemia and decrease intracellular HbS concentration.[14]

Blood transfusion is recommended for patients whose haemoglobin concentration falls by 2 g/dL during an acute painful crisis, and exchange transfusion is recommended for those with acute chest syndrome and severe hypoxia at steady state haemoglobin concentration.[35]

Antibiotics

Administer antibiotics in patients in whom you suspect infection, after appropriate screening has taken place, including blood, urine, or sputum culture. Patients with SCD are susceptible to infections because of asplenia, T and B cell abnormalities, defective complement activation, leucocyte dysfunction, and infarcted tissue.[36] The spleen usually removes encapsulated bacteria such as pneumococcus, therefore most treatment regimens include a cephalosporin. Furthermore, in patients with suspected acute chest crisis, consider treatment with a macrolide or quinolone because of the high frequency of infection with atypical organisms such as *Mycobacterium pneumonia*.[37]

Anticoagulation

Although SCD is a hypercoagulable state, no established recommendations are available on the use of anticoagulant prophylaxis during acute painful crisis. Both enoxaparin and direct oral anticoagulants have been used.[38]

Psychological support

Support patients compassionately throughout their admission to hospital, paying special attention to social or psychological factors that may have precipitated crisis, and the effect of crises on domestic, educational, and professional functioning. This may enhance your rapport with the patient and guide specific interventions.

Acute chest syndrome

Acute chest syndrome is a combination of pulmonary infarction, infection, and fat embolism. It occurs as a result of sickling and ischaemia in deep tissues of the chest wall. Patients typically present with fever, acute respiratory signs and symptoms, such as cough, wheezing, dyspnoea, crepitations or chest pain, and consolidation on chest radiograph (fig 2). Acute painful crisis may precipitate or accompany acute chest syndrome,[35] which is the most common cause of death in adult patients with SCD in the UK.[39]

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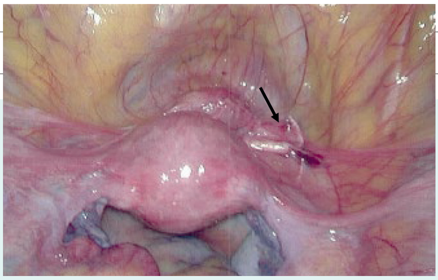
MINERVA

Management of a missing Mirena

EP: Ten days after I had an intrauterine system (IUS) inserted, I developed constant and severe pain in my left shoulder. My general practitioner (GP) arranged magnetic resonance image (MRI) scans of my shoulder, neck, and spine, which showed nothing to explain the pain I was experiencing. I also started to experience double vision in my right eye, tinnitus, and sporadic full hearing loss.

Given the onset of symptoms soon after my coil was inserted, my GP tried unsuccessfully to remove the IUS. I was referred to the gynaecology department where the registrar also attempted to remove the coil, but it was excruciatingly painful. I was then booked in for a hysteroscopy under general anaesthetic where the doctors located the coil strings but not the coil. An urgent MRI scan two days later showed the coil had migrated. I underwent a laparoscopy about a week later, which went extremely well. My shoulder pain was completely gone within a week, and my eyesight came back within a month.



FS and HK: This woman in her 30s with a history of two previous caesarean sections presented with atypical symptoms of a migrated IUS. Diagnostic laparoscopy confirmed MRI findings of an IUS in the right parauterine space. The IUS was removed by opening the visceral peritoneum and dissecting the fibrotic tissue around the hormone cylinder (arrow), taking care to avoid injury to surrounding structures, including the bladder, ureter, and uterine vessels.

IUS use carries a risk of perforation of the uterus of one or two in 1000, typically causing pelvic pain and uterine bleeding. A referred shoulder tip pain might occur because of irritation of the peritoneal cavity by the foreign body. We are not aware of any previous reports of hearing loss, tinnitus, or diplopia related to this complication of IUS.

Furat Sankary (Furat.Sankary@NHS.net), consultant obstetrician and gynaecologist;
Hamza Katali, consultant obstetrician and gynaecologist;
Emily Prosser, patient author,
Wye Valley Hospital, Hereford, UK

Patient consent obtained.

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Housing crisis

A census in October last year estimated that, in England, around 4000 people were sleeping rough each night. That's a large number but only a small proportion of England's 57 million population. Rough sleepers, however, are hugely outnumbered by people without homes. Here the figure is 113 000 households, including 150 000 children. A discussion of the causes contributing to the housing crisis currently affecting many areas of the UK makes the point that housing should be thought of as an essential service, not unlike the health service, rather than a commodity to be bought and sold (https://www.lrb.co.uk/the-paper/v46/n13/james-meek/market-forces-and-malpractice).

Time to recovery after infection with SARS-CoV-2

Five thousand participants in a collaborative study of covid-19 research run by Columbia University reported how long it took them to recover after infection with SARS-CoV-2. Median time to recovery was 20 days, but more than one in five were still symptomatic at 90 days. Delayed recovery was commoner in women and people with pre-existing cardiovascular disease. Those who had been vaccinated against covid-19 or who had been infected by the omicron variant were more likely to recover faster. Speed of recovery wasn't linked to age, educational attainment, smoking history, obesity, diabetes, chronic kidney disease, asthma, chronic obstructive pulmonary disease, or depressive symptoms (*JAMA Netw Open* doi:10.1001/jamanetworkopen.2024.17440).

Wooden surfaces have antiviral properties

Wood has been an essential raw material for humans since prehistoric times. It has long been used to make tools, buildings, boats, furniture, and musical instruments. Even so, its beneficial characteristics are still being discovered. Long known to have antibacterial and antifungal properties, which is why it's a good choice for chopping blocks and cutting boards, several species of wood exhibit antiviral properties too. Coronavirus loses its ability to infect cells after only a few minutes on surfaces of pine or spruce (*ACS Appl Mater Interfaces* doi:10.1021/ACSAMI.4C02156).

Weight loss with glucagon-like peptide-1 agonists

Glucagon-like peptide-1 receptor agonists slow gastric emptying, inhibit the release of glucagon, and stimulate insulin production. They also reduce food intake, which, of course, is why they are an effective treatment for obesity. Quite how they do this isn't clear but one mechanism involves a heightened perception of fullness in response to the presentation of food. A series of experiments in mice identifies neurons in the dorsomedial nuclei of the hypothalamus which signal pre-ingestive satiation—how hungry the animal feels before it starts eating—and which contain GLP-1 receptors (*Science* doi:10.1126/science.adj2537).

Can pets make people healthier?

It's easy to think of reasons why owning a pet might be good for physical and mental health—more exercise and less loneliness, to name but two. On the other hand, pets can trigger allergies and exacerbate family tensions—not to mention the cost of pet food and veterinary care. Most research into the effect of pets on health is flawed by poor methods and industry sponsorship (the pet industry is valued globally at more than $300bn), and few investigations have explored the downsides of human-pet relations, such as bites and zoonotic diseases (https://undark.org/2024/06/24/fuzzy-science-pets-improve-health/).

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CORRECTION

In Minerva published 20 June 2024 (doi:10.1136/bmj.q1296) the item 'Stopping valproate' erroneously reported that guidelines recommend restricting the use of valproate to men and women under 55 because of the drug's teratogenicity. The correct statement is that guidelines recommend restricting use of valproate to men and women over 55. The article has been corrected online (https://www.bmj.com/content/385/bmj.q1296).