US children get two thirds of their energy intake from ultra-processed foods

Here’s an unsurprising but shocking fact: US children (2-19 years old) get most of their daily calories from ultra-processed food, and that proportion is increasing. This large cross-sectional US study found that the percentage of total calories derived from ultra-processed food rose from 61.4% in 1999 to 67% in 2018. Minimally or unprocessed food (typically home cooked food) made up 28.5% of energy intake in 1999, falling to 23.5% by 2018. It’s a trend that reflects the well documented rise in childhood obesity, and it seems likely that the two are connected. Children are getting more of their energy from ready meals (increasing from 2.2% to 11.2%) and around the same percentage from sweet snacks (from 10.7% to 12.9%). They get 5.5% fewer calories from sugary drinks and 3% less from sauces and oils. The biggest increase and highest overall proportion of ultra-processed foods was among young non-Hispanic black populations, followed by Mexican Americans. The findings relied on self reported dietary recall, which can be unreliable, and the NOVA classification system of foods that some claim is overstated.

Incompletely resected polyps risk future and more advanced cancer

What happens to neoplastic colorectal polyps that are incompletely resected? This small observational cohort study of 166 patients who had a surveillance colonoscopy as part of the CARE study (Complete Adenoma REsection study 2009-12) found an increased risk of metachronous neoplasia (that is, a second primary cancer diagnosed more than six months after the first) in segments with incomplete versus complete resection (52% vs 23%). Advanced cancer was more likely in segments that had incompletely resected polyps compared with fully resected ones (18% vs 3%). Further work is needed, not least because of incomplete patient follow-up, which may have introduced bias, and the relatively small numbers involved.

Two doses of Pfizer and AstraZeneca vaccines effective against the delta variant

This useful test-negative case-control analysis found that both the Pfizer and Oxford/AstraZeneca vaccines were effective against symptomatic covid-19 due to the delta variant (now the most common variant in the UK and spreading rapidly elsewhere) and only slightly less effective against the alpha variant. After a single dose of vaccine, effectiveness against the delta variant was limited (36% estimated effectiveness with Pfizer, 30% with AZ), but two doses conferred good protection (88% effectiveness with Pfizer, 67% with AZ). The findings were observational, so need to be treated with caution. PCR testing is imperfect and may have skewed results by detecting one variant more than another, and populations at greater clinical risk may have been more likely to be given the AZ rather than Pfizer vaccine, which would have further muddied the waters.

Prison overcrowding increases the risk of covid-19

Covid-19 thrives in crowded prisons that exceed their design capacity and have fewer single cells, according to this longitudinal ecological study (designed to study a specific group of people) of 6876 prisoners in 14 Massachusetts state prisons from April 2020 to January 2021. The mean covid-19 incidence in prisons was six times greater than in the surrounding population, and rates rose with the degree of overcrowding (14% increase in covid incidence for every 10% increase in capacity, and an 18% fall in incidence for every 10% increase in prisoners housed in single cells). There could be other unknown variables at play, and the true incidence of covid may have been higher as testing did not include asymptomatic cases. Prisoners who catch covid are more likely to die of it than the general population, so steps to mitigate the risks, such as reducing overcrowding, are urgently needed.

Hope for adults with refractory leukaemia

The ZUMA-3 phase 2 study is an international, multicentre trial of chimeric antigen receptor (CAR) T cell therapies targeting the CD19 protein for adults with relapsed or refractory B-precursor acute lymphoblastic leukaemia. Outcomes in these patients are generally poor. The researchers found that a single infusion of the novel therapy KTE-X19 produced remission (complete remission in 56%, partial remission in 71%) in a small group of patients. Median overall survival was 18.2 months, and the safety profile was described as “manageable” with no deaths due to cytokine release syndrome. The single-arm design is a potential limitation, and longer follow-ups of safety and efficacy are needed.

Ann Robinson is an NHS GP and health writer and broadcaster
Subacute small bowel obstruction or chronic large bowel obstruction

Marc Winslet,1 Kevin Barraclough,2 Gregor Campbell Hewson3

1Royal Free Hampstead NHS Trust and University College London
2Hoyland House, Painswick, Stroud
3Emergency Department, Royal Infirmary of Edinburgh

Correspondence to: K Barraclough k.barraclough@btinternet.com

This is one of a series of occasional articles highlighting conditions that may be more common than many doctors realise or may be missed at first presentation. The series advisers are Anthony Harnden, professor of primary care, Department of Primary Care Health Sciences, University of Oxford, and Dr Kevin Barraclough, School of Social and Community Medicine, University of Bristol. To suggest a topic for this series, please email us at practice@bmj.com.

A 48 year old woman presented to her general practitioner with a seven day history of colicky lower abdominal pain and vomiting. The intermittent colicky abdominal pain started first when it woke her from sleep. The next day she vomited twice. Her colicky abdominal pain continued, and she noted that it tended to occur about half an hour after eating. She continued vomiting once or twice a day. She reported no vomiting that are less pronounced but which persist over a period of days to weeks (box). In the presence of complete or near complete obstruction, the proximal bowel dilates with increasing peristalsis, resulting in colicky abdominal pain. Subsequent reduction in peristaltic strength results in flaccidity and paralysis of the bowel. Gas from bacterial overgrowth and fluid sequestered in the atonic bowel (secretions from salivary glands, stomach, pancreas, liver, and small bowel itself amounting to several litres a day, which are normally reabsorbed) further distend the proximal bowel.

Most bowel obstruction seen in primary care or emergency departments is caused by a blocking or twisting mechanical obstruction rather than paralytic ileus (most commonly seen postoperatively). Around 20% of colorectal cancers in the UK present as emergencies with chronic or acute on chronic bowel obstruction.2 3

The patient’s constellation of symptoms can vary depending on whether the obstruction is high or low and whether the obstruction is acute, subacute, chronic, or acute on chronic (see infographic).

WHAT IS SUBACUTE BOWEL OBSTRUCTION?

Subacute small bowel obstruction implies an incomplete obstruction of the bowel lumen. Whereas patients with complete bowel obstruction rapidly become extremely unwell, patients with subacute small bowel obstruction or chronic large bowel obstruction may have colicky pain, abdominal distension, and vomiting that are less pronounced but which persist over a period of days to weeks (box). In the presence of complete or near complete obstruction, the proximal bowel dilates with increasing peristalsis, resulting in colicky abdominal pain. Subsequent reduction in peristaltic strength results in flaccidity and paralysis of the bowel. Gas from bacterial overgrowth and fluid sequestered in the atonic bowel (secretions from salivary glands, stomach, pancreas, liver, and small bowel itself amounting to several litres a day, which are normally reabsorbed) further distend the proximal bowel.

Most bowel obstruction seen in primary care or emergency departments is caused by a blocking or twisting mechanical obstruction rather than paralytic ileus (most commonly seen postoperatively). Around 20% of colorectal cancers in the UK present as emergencies with chronic or acute on chronic bowel obstruction.2 3

The patient’s constellation of symptoms can vary depending on whether the obstruction is high or low and whether the obstruction is acute, subacute, chronic, or acute on chronic (see infographic).

WHY IS IT MISSED?

Both subacute small bowel obstruction and chronic obstruction present with symptoms that frequently occur in more common alternative diagnoses such as gastroenteritis or constipation. A particular difficulty for the primary care clinician is that both vomiting and colicky abdominal pain are relatively common features of infective gastroenteritis, and patients with incomplete obstruction may also initially present with watery diarrhoea, seemingly corroborating the impression of gastroenteritis.

Further, in contrast to the features of acute/complete intestinal obstruction, which are dramatic and usually clear, the initial presenting symptoms of a subacute obstruction can be subtle and prolonged. The patient may not initially seem or feel particularly unwell, and pain may appear mild, particularly in older adults.5 Abdominal distension is usually significant, but it may have developed slowly and gone unnoticed. Vital signs and electrolytes are also often unremarkable.

An atypical presentation of bowel obstruction, particularly an initial presentation with high obstruction or a subacute presentation with low obstruction, could easily be mistakenly classified as non-specific abdominal pain—a common emergency department presentation.

WHAT YOU NEED TO KNOW

• Although the features of acute bowel obstruction are usually clinically obvious, the presentation of subacute small bowel obstruction and acute on chronic (large) bowel obstruction may be much more subtle
• Consider bowel obstruction whenever a patient presents with colicky abdominal pain and recurrent vomiting (especially if prolonged for more than 24 hours), particularly if diarrhoea is minimal or absent
• Abdominal distension is an important sign with bowel obstruction, but it may be absent if the obstruction is high and may be difficult to detect in obese patients. Vomiting may occur late and infrequently with low bowel obstruction
• Neither normal bowel sounds nor stool in the rectum excludes the diagnosis
Why does it matter?

Early diagnosis of subacute bowel obstruction results in better outcomes for a number of reasons. Recognising a treatable cause of the obstruction could prevent devastating consequences (for example, recognising and reducing a hernia before strangulation) or even help the patient avoid emergency surgery (such as identifying and stenting a partially obstructing large bowel cancer to allow time for elective surgery planning). Even small diagnostic delays can result in metabolic derangements, bowel strangulation, bowel necrosis, perforation, and sepsis. Bowel obstruction leads to loss of both fluid and electrolytes through vomiting, but also through sequestration of fluid and electrolytes in the distended, obstructed bowel, with volumes up to several litres. If obstruction is diagnosed late, the patient may be unfit for immediate surgery due to metabolic derangement or hypovolaemic shock.

How is it diagnosed?

Subacute bowel obstruction is primarily a clinical diagnosis. Carefully consider the possibility of bowel obstruction in patients presenting with colicky abdominal pain and recurrent vomiting (especially if >24 hours) with any abdominal distension but minimal or absent diarrhoea. In patients with a history of abdominal or pelvic surgery (particularly in the past three years) obstruction due to adhesions is common. Though colorectal cancer also occurs in younger patients, the possibility of an obstructing colorectal cancer warrants particular consideration in patients over the age of 50 years.

While both vomiting and colicky abdominal pain are common symptoms in the community, it is not common for them to occur in combination, and especially not for more than 24 hours. If vomiting is the predominant feature in infective gastroenteritis, then viral gastroenteritis or ingestion of a pre-formed toxin is usually the cause. Severe colicky abdominal pain is uncommon in gastroenteritis, and the vomiting is usually of short duration, rarely more than 24 hours. Although abdominal distension is an important sign of low bowel obstruction, interpret its absence with caution since it may be difficult to assess in some patients, and distension may be largely absent with high obstruction or with an early low small bowel obstruction.

Examine all hernial orifices, as it is easy to miss a small irreducible hernia (particularly a femoral hernia). Ask about the last passage of faeces or flatus. Stool might also be present in the rectum with relatively high obstruction or in those who present early, and the presence of stool in the rectum does not rule out obstruction.

Abnormal bowel sounds are one of the textbook signs of bowel obstruction, but relatively normal sounding or quiet bowel sounds do not exclude the diagnosis of obstruction. Initially hyperactive or “tinkling” bowel sounds may become silent as the bowel becomes astatic. In one study, bowel sounds from 98 patients with suspected bowel obstruction were recorded. These recordings were then played back to 53 senior and junior assessing doctors. Of the 98 patients, 35 were found to have bowel obstruction. The sensitivity of abnormal bowel sounds was 0.42 and the specificity 0.78, with only minimal agreement between listeners.

Importantly, there will not usually be findings of peritonism in subacute small bowel obstruction until the bowel infarcts or perforates, at which point the patient needs emergency surgery. The absence of signs of peritonism or a finding of normal bowel sounds does not exclude the diagnosis.

The sensitivity and specificity of plain radiograph for small bowel obstruction are low, and abdominal computed tomography (CT) is the imaging modality of choice. CT is not only highly sensitive for signs of obstruction even before the patient has many symptoms but also identifies the cause of the obstruction in the majority of cases. However, an abdominal CT does carry a high radiation dose, equivalent to 370 chest x-rays.

Even small diagnostic delays can result in metabolic derangements, bowel strangulation, bowel necrosis, perforation, and sepsis.

How is it managed?

Patients generally have nasogastric aspiration, intravenous rehydration, and correction of electrolyte and acid-base disturbances before surgical removal of the cause of the obstruction. If the cause is thought to be adhesions and there is no abdominal tenderness (which would be suggestive of impending bowel infarction), then patients may be managed for 24 hours without surgery to see if the obstruction settles. Patients with adhesions and/or multiple prior bowel obstructions due to adhesions may benefit from a low residue diet.

Competing interests: None declared.

Cite this as: BMJ 2021;374:n1765

Find the full version with references at http://dx.doi.org/10.1136/bmj.n1765

EDUCATION INTO PRACTICE

• How do you exclude subacute bowel obstruction in someone with vomiting and abdominal pain of a duration of more than 24 hours?
• GPs often diagnose infective gastroenteritis in both children and adults. Out of the last 30 such diagnoses in your practice, have any turned out to be incorrect?
• Do you assess patients with acute abdominal pain mainly on the basis of the presence or absence of signs of peritonism? How would you recognise subacute small bowel obstruction or chronic large bowel obstruction now?

The patient’s constellation of symptoms can vary depending on whether the obstruction is high or low and whether the obstruction is acute, subacute, chronic, or acute on chronic.
The features of acute intestinal obstruction are dramatic and the clinical diagnosis is usually clear. However, in subacute small bowel obstruction or chronic large bowel obstruction the history and the physical findings may be more subtle and it is important to appropriately weight the clinical features taken together. This graphic shows how some of the common symptoms and signs overlap. Considering them together can help to determine the most likely types, position, and causes of bowel obstruction.

Assessment of bowel obstruction
Recognising overlapping signs and symptoms

Intraluminal
- Faecal impaction 8%

Strictures in the bowel wall
- Colorectal cancer 15%
- Diverticular disease

Extraluminal
- Sigmoid and other volvulus

Widely divergent incidence rates can be found for these conditions, perhaps because of differences between populations included in research, such as developed versus developing countries.

**Disclaimer**
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STATE OF THE ART REVIEW

Long covid—mechanisms, risk factors, and management

Harry Crook,1 Sanara Raza,1 Joseph Nowell,1 Megan Young,1 Paul Edison1 2

Faculty of Medicine, Imperial College London
1Cardiff University, Cardiff
Correspondence to: P Edison paul.edison@imperial.ac.uk
This article is a summary of State of the Art Review (https://www.bmj.com/content/374/bmj.n1648) published on bmj.com on 26 July 2021, which discusses the epidemiology, risk factors, and long term impact of symptoms of long covid, and the evidence about how to manage it.

The National Institute for Health and Care Excellence (NICE) defines long covid as the symptoms that continue or develop after acute covid-19 infection and which cannot be explained by an alternative diagnosis. The term includes ongoing symptomatic covid-19, from four to 12 weeks post-infection, and post-covid-19 syndrome, beyond 12 weeks post-infection. Long covid can affect people with very mild acute disease as well as those with the most serious illness. Like acute covid-19, long covid can involve multiple organs and can affect many systems including but not limited to, the respiratory, cardiovascular, neurological, gastrointestinal, and musculoskeletal systems.

The reported incidence and mortality rates of covid-19, and of long covid, vary between countries, making it difficult to reliably predict the number of patients who will develop long covid. The UK Office for National Statistics (ONS) estimated that the 5 week prevalence of any symptom among survey respondents who tested positive for covid-19 between 22 April and 14 December 2020 was 22.1%, while the 12 week prevalence was 9.9%.

Symptoms

Fatigue
Fatigue is more profound than being overtired; it is unrelenting exhaustion and a constant state of weariness that reduces a person’s energy, motivation, and concentration. In long covid, fatigue is one of the most reported manifestations, with the ONS estimating the 5 week prevalence of fatigue to be 11.9% among people who have had covid-19. Fatigue is a common persisting symptom regardless of severity of the acute stage of covid-19. One cross sectional study found that 92.9% and 93.5% of hospitalised and non-hospitalised covid-19 patients, respectively, reported ongoing fatigue at 79 days following onset of illness.

Dyspnoea
Breathlessness is common in people with long covid. The ONS estimates that shortness of breath has a prevalence of 4.6% at 5 weeks post-covid-19 infection, regardless of presence of acute respiratory symptoms or disease severity. Abnormalities in diffusion capacity for carbon monoxide, total lung capacity, forced expiratory volume in the first second, forced vital capacity, and small airway function, have been seen in hospitalised covid-19 patients at time of discharge (approximately one month following onset of symptoms) showing that lung function in people who have had covid-19 may take time to recover. One study reported that 63.4% of 143 patients assessed were still experiencing dyspnoea at 60 days after covid-19 onset.

Cardiovascular abnormalities
Cardiac injury and elevated cardiac troponin levels are associated with a substantially increased risk of mortality in patients admitted to hospital with acute covid-19 infection. Persisting cardiovascular abnormalities may be burdensome for people with long covid. A cohort study showed cardiac involvement, ongoing myocardial inflammation, and elevated serum troponin levels in many people with covid-19 at 71 days following diagnosis, while a large case series showed that chest pain, possibly owing to myocarditis, was a common manifestation in patients 60.3 days after onset of covid-19 symptoms, with 21.7% of the 143 patients assessed reporting chest pain. Those considered at low risk of severe covid-19, such as young, competitive athletes, have also been found to have residual myocarditis long after recovery from covid-19. In addition to cardiac complaints, studies have highlighted an emerging trend in the development of new onset postural orthostatic tachycardia syndrome (POTS) in individuals post-covid-19 infection, because of autonomic dysfunction.

Cognition and mental health
Studies have explored cognitive function and deficits in patients with covid-19 and suggest that the virus can cause septic encephalopathy, non-immunological effects such as hypotension, hypoxia, and vascular thrombosis, and immunological effects such as adaptive autoimmunity, microglial activation, and a maladaptive cytokine profile. Additionally, patients admitted to hospital with covid-19 have presented with a range of complaints including encephalopathy, cognitive impairment, cerebrovascular events/disease, seizures, hypoxic brain injuries, corticospinal tract signs, dysexecutive syndrome, an altered mental status, and psychiatric conditions. These findings reveal that neurological symptoms associated with covid-19 are common, diverse, and could pose substantial problems for rehabilitation and ongoing care following recovery from covid-19. It is unknown who is most affected by cognitive complaints induced by covid-19 and how long they persist; however, patient experiences and published summaries of long covid have described “brain fog” to be a common and debilitating symptom.
Critical illness, severe acute respiratory syndrome, and long term ventilator support are known to have detrimental effects on long term cognition. With many covid-19 patients requiring admission to intensive care units and mechanical ventilation, long term cognitive impairment and delirium are likely to pose considerable problems.

Stroke and headache are prevalent in those recovered from acute covid-19, with the ONS estimating the 5 week prevalence of headache at 10.1% in those who have had covid-19. Covid-19 has also been associated with an increased risk of developing neurological conditions including Guillain-Barré syndrome, and neurodegenerative conditions such as Alzheimer’s disease.

The pandemic has had a negative effect on mental health, with people who have had covid-19 exhibiting long term psychiatric symptoms including post-traumatic stress disorder (PTSD), depression, anxiety, and obsessive-compulsive symptoms following recovery from the acute infection. Quarantine, isolation, and social distancing also have damaging effects on mental health and cognition. A rapid review article states that the longer a person is confined to quarantine, the poorer the outcomes for their mental health, while periods of isolation and the inability to work can cause anxiety, loneliness, and financial concerns, and living through a global health crisis can lead to avoidance behaviours and behavioural changes. The mental health of the older population is greatly affected by social distancing and similar measures. People living in care homes, including people with dementia, are vulnerable to covid-19 and to other impacts of the pandemic. Those with dementia in care homes have been observed to become more depressed, anxious, agitated, and lonely. Protracted social isolation has resulted in exacerbation of neuropsychiatric and behavioural disturbances, including apathy, anxiety, agitation, boredom, and confusion in dementia patients living in care homes, to a greater degree than for care home residents without dementia.

Sleeplessness is also commonly reported following recovery from covid-19, with many studies finding poor sleep quality and sleep disturbances to be frequent following recovery from acute illness. Knowledge of the covid-19 death toll also has a negative impact on quality of sleep, stress, anxiety, and other negative emotions, and sleep problems have been shown to be associated with covid-19 related loneliness.

Olfactory and gustatory dysfunction
Abnormalities of smell and taste can persist following recovery from covid-19. The ONS estimated the 5 week prevalence of loss of smell and loss of taste as 7.9% and 8.2% of all people who have had covid-19, respectively. Other studies have found varying prevalence of olfactory and gustatory dysfunction, ranging from 11% to 45.1%.

Other commonly reported manifestations
Covid-19 infection can result in multi-organ impairment in individuals of both low and high risk for severe acute disease. Studies show the presence of acute kidney injury in discharged patients who have recovered from covid-19. Although the long term effects of covid-19 on the kidneys are not fully elucidated, a study assessing kidney function in patients with covid-19 found that 35% had decreased kidney function at 6 months post-discharge.

Acute, pancreatitis triggered by SARS-CoV-2 has been seen in people with covid-19, while serum amylase and lipase levels have been observed to be higher in people with severe illness compared with mild cases, and computed tomography images have shown pancreatic injury. Other organs and tissues, such as the liver, gastrointestinal tract, muscle, and blood vessels, express the ACE2 receptor and are susceptible to direct damage from SARS-CoV-2 and indirect damage through elevated systemic inflammation. Alterations in gut microbiota and subacute thyroiditis have been observed following covid-19 infection.

Risk factors
Risk factors for severe covid-19 and subsequent hospital admission and death include older age, male sex, non-white ethnicity, being disabled, and pre-existing comorbidities including obesity, cardiovascular disease, respiratory disease, and hypertension. The risk factors for developing long covid are less established.

One study interviewed 274 non-hospitalised patients who had covid-19 between 14 and 21 days following their positive test. Risk factors for not returning to “usual health” included age, with those aged ≥50 having the greatest odds ratio, and number of pre-existing medical conditions, with a greater number of conditions associated with a greater odds ratio of not returning to “usual health.” Of the pre-existing conditions, hypertension, obesity, a psychiatric condition, or an immunosuppressive condition corresponded with the greatest odds of not returning to “usual health.”

Other studies have found that people with a more severe acute illness and those that required hospital admission were more likely to experience long covid symptoms.

Although certain factors may increase the risk of both severe covid-19 and long covid, some factors associated with covid-19 do not also increase the risk for long covid. Male sex and older age are associated with an increased risk of severe covid-19; however, the ONS reported that the prevalence of any long covid symptoms is higher in women compared with men (23.6% versus 20.7%), while the age group estimated to be most greatly affected by long covid symptoms is 35-49 years (26.8%), followed by 50-69 years (26.1%), and the ≥70 years group (18%). Pre-existing conditions including obesity, diabetes, and cardiovascular disease, have shown no association with the risk of developing long covid. However, pre-existence of asthma has been found to be significantly associated with long covid.
### Covid-19 diagnosis
- Suspected acute covid-19
- Retrospective clinical covid-19 diagnosis as self managed initial reaction
- Acute covid-19 diagnosed with positive test without hospitalisation
- Acute covid-19 diagnosed with positive test with hospitalisation

### Identifying long covid
- Identifying people with ongoing symptomatic covid-19 or post covid-19 syndrome and advise/inform on recovery
- Clinical review at 6 weeks

### Assessment of people with new or ongoing symptoms after acute covid-19
- Use holistic, person centred approach
- Include comprehensive clinical history and appropriate examinations
- Consider wide ranging, fluctuating symptoms that can occur after acute covid-19
- Discuss effect of post covid-19 symptoms on daily life and work/education
- Discuss person’s experiences with empathy
- Do not predict likelihood of long covid based on acute symptoms
- Consider gradual decline, frailty or dementia a sign of long covid and use cognitive screening tools

### Investigations and referral
- Refer urgently to relevant service if symptoms could be life threatening
- Offer tests depending on individual needs (exercise tolerance test, blood pressure and heart rate recordings, chest radiograph, etc)
- Consider referral urgently if required for people with psychiatric symptoms
- After ruling out life threatening conditions consider referral to multidisciplinary assessment service from 4 weeks after start of acute covid-19

### Planning care
- After assessment, use shared decision making to discuss and agree with person what support and rehabilitation they need including advice on self management and support/referral to agreed clinical pathway
- When discussing appropriate level of support:
  - Think about overall impact of symptoms on life
  - Look at overall trajectory of symptoms including fluctuations

### Management
- Self management and supported self management
  - Give advice and information on self management
  - Explain that it is unknown if over-the-counter vitamins and supplements are helpful
  - Support people in discussing returning to work/education
- Support for older people and children
  - Consider additional support and referral for specialist advice
- Multidisciplinary rehabilitation
  - Assess physical, psychological and psychiatric aspects of rehabilitation
  - Work with person to develop rehabilitation and manage plan
  - Encourage people to monitor progress

### Follow-up and monitoring
- Agree how often follow-up is needed and which professionals should be involved
- Offer people in-person or remote monitoring using shared decision making
- Tailor monitoring to people’s symptoms and discuss changes
- Consider self monitoring at home and ensure people have clear instructions and parameters for when to seek help
- Be alert to symptoms developing that could mean referral or investigation is needed

### Sharing information and continuity of care
- Ensure effective information sharing and integrated working by sharing information promptly between services and through multidisciplinary meetings
- Give people copy of their care plans or records
- Include baseline and ongoing assessments in shared information including when discharging person from hospital
- Provide continuity of care with same healthcare professional or team as much as possible

### Service organisation
- Provide access to multidisciplinary services for assessing physical and mental health and carrying out further tests
- Provide integrated, multidisciplinary rehabilitation services, based on local need and resources. Core team could include (not limited to): Occupational therapy, physiotherapy, clinical psychology and psychiatry, rehabilitation medicine
- Share knowledge, skills and training between services to help practitioner to provide assessments and interventions
- Agree local, integrated referral pathways

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Overview of the NICE rapid guideline: managing the long term effects of covid-19
Pre-existence of asthma is found to be significantly associated with long covid

**Guidelines**

Various guidelines focus on treating and managing long covid, or have included recommendations for long covid in their guidelines for treating covid-19. Guidelines recommend how to identify, refer, and treat patients with long covid. The holistic assessment, investigation, and management approaches suggested by NICE are outlined in the figure.

**Pulmonary symptoms**

Pulmonary symptoms are common during long covid. NICE recommends that breathlessness may be investigated using an exercise tolerance test suited to the person’s ability—for example, the one minute sit-to-stand test, and treatment and management should be multidisciplinary, with advice and education given on managing breathlessness. Furthermore, the guidelines recommend offering patients with continuing respiratory symptoms a chest radiograph by 12 weeks after infection. Blood oxygen levels can be monitored using a pulse oximeter.

Patients with pulmonary fibrosis resulting from covid-19 should be managed in accordance with NICE guidelines on idiopathic pulmonary fibrosis, while antifibrotic therapies may be advantageous. Exacerbations of bronchiectasis should be treated with antimicrobial prescribing, while non-antimicrobial therapies, including airway clearance, may be considered. Modified rehabilitation practices, including stretching, body rotations, acupressure, and massage have shown beneficial long-term effects on respiratory symptoms in patients with mild covid-19 in a small trial.

**Cardiovascular symptoms**

The NICE guidelines on long covid state that exercise tolerance tests may be undertaken to measure heart function, while lying and standing blood pressure and heart rate recordings should be performed if POTS is suspected. Urgent referral should occur for people who have symptoms of a life-threatening complication, such as cardiac chest pain.

NICE guidelines recommend β-blockers for several cardiac complaints, including angina, cardiac arrhythmias, and acute coronary syndromes; therefore, β-blockers may be useful in the treatment of cardiovascular manifestations of long covid. Myocarditis may resolve naturally over time; however, supportive and/or immunomodulating therapy may improve recovery, as a systematic review describes. A review has also suggested that anticoagulants may be used to reduce the risks associated with hypercoagulability. Meanwhile, advice and education, agents to maintain vascular tone, and agents to manage palpitations have been shown by a randomised controlled trial and discussed in a review to be advantageous in the treatment of POTS.

**Fatigue, cognitive, and neuropsychiatric symptoms**

Chronic fatigue is a common manifestation of long covid. NICE recommends that self-management and support are important in managing fatigue, owing to the poor availability of treatment specific to covid-19. A condition that may overlap with long covid fatigue is myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS); therefore, the treatment algorithm designed for treating ME/CFS may prove useful in treating post-covid-19 fatigue. NICE has specific guidelines that outline how to refer and treat ME/CFS patients; these include cognitive behavioural therapy and graded exercise therapy. Following criticism of these guidelines from the ME Association, however, NICE aims to publish revised guidelines in August 2021.

Another management strategy for fatigue is pacing, whereby patients manage tasks and activities to avoid over-exertion and exacerbating fatigue. NICE guidelines for ME/CFS describe pacing as a self-management strategy; however, guidance and education from healthcare professionals may be useful for patients. Evidence from randomised controlled trials for the use of pacing in long covid is yet to be seen. Evidence specific to covid-19 is lacking; therefore, cognitive impairment should be managed with support, including setting tailored, achievable goals and implementing validated screening tools. Managing cognitive impairment will require a holistic approach; however, patients should be advised that most people gradually recover from cognitive impairment following severe illness.

The holistic approach to treatment should extend to the services offered, with professionals including occupational and speech and language therapists addressing cognitive changes. Sleep disturbances may be managed by following relevant guidelines on insomnia, and a range of treatment strategies can be considered. Patients with mental health problems alongside or as a result of long covid can be managed following the relevant guidelines: depression, anxiety, PTSD, obsessive-compulsive disorder, and other mental health problems. Care home residents, including those with dementia, who acquire long covid have additional needs.

Competing interests: See bmj.com.

Cite this as: BMJ 2021;374:n1648

Find the full version with references at http://dx.doi.org/10.1136/bmj.n1648
**CASE REVIEW**

**A boy with annular erythema on the nose**

A 4 year old boy presented with annular erythema on his nose. The lesion had begun as a small itchy macule seven days earlier. Initially, discoid eczema was diagnosed and he was treated with hydrocortisone butyrate ointment for three days. Although the pruritus improved, the skin rash became more extensive. The patient had no history of preceding injury or insect bite. The household had a cat. On physical examination, an annular erythematous lesion (1 cm × 1 cm) without scaling was observed on the boy's nose (fig 1).

1 What is the most likely diagnosis?
2 What are the differential diagnoses?
3 How is this condition treated?

Submitted by Ya Bin Zhou, Lin Ma, and Yuan Yuan Xiao
Parental consent obtained.

Cite this as: BMJ 2021;374:n1952

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1 What is the most likely diagnosis?

**Tinea faciei incognito**—a superficial dermatophytosis that occurs on the glabrous skin of the face. Typically lesions are singular or multiple annular scaling patches with central clearing. Steroid treatment can mask the typical features of tinea, termed tinea incognito. The causative agent varies according to the geographical region and potential environmental reservoirs.

Microsporum canis, a zoophilic dermatophyte, is one of the most common causes of tinea faciei. Most M canis infections are associated with exposure to sick or subclinically infected animals.

2 What are the differential diagnoses?

Possibly because of the complex anatomy of the face, tinea faciei has a high potential for misdiagnosis compared with other forms of tinea. It can mimic other illnesses, such as systemic lupus erythematosus, rosacea, seborrhoeic dermatitis, atopic dermatitis, contact dermatitis, perioral dermatitis, pityriasis alba, bacterial infections, granuloma annulare, and herpes simplex.

3 How is this condition treated?

Topical antifungals such as azoles and allylamines are the first line treatments for most cases. Systemic antifungal treatment is needed for those with coexisting infection of vellus hair, atypical forms, or multiple affected cutaneous areas.

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**CASE REVIEW**

**A boy with annular erythema on the nose**

Fig 1 | 1 cm × 1 cm infiltrated annular erythema without scaling on right side of nose

Fig 2 | Complete remission of lesion after topical terbinafine treatment for four weeks

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**LEARNING POINTS**

1. Consider tinea when symptoms worsen after treatment with topical corticosteroids.
2. Ask about history of contact with animals if tinea is suspected.
3. Tinea incognito is the appearance of tinea infection when characteristic features or symptoms have been masked by treatment with steroids.

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**PATIENT OUTCOME**

To confirm the diagnosis, skin scrapings of the lesion were taken for direct microscopy with calcofluor white stain. This method was chosen for speed and because it is the least invasive method for identification. Microscopy revealed numerous fungal hyphae. Fungal culture grew *M canis*.

The boy was treated with topical terbinafine hydrochloride cream for four weeks, with complete remission of the lesion (fig 2).

A veterinary surgeon diagnosed dermatophytosis in the household cat, which was treated with topical terbinafine. No recurrence of the boy’s infection was reported at a two month follow-up visit.

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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.
**MINERVA**

**Inoculated warts by eyebrow tattoos**

These are viral warts on the eyebrows of a woman in her late 20s (black arrows), caused by inoculation with human papillomavirus 18 (HPV18).

The patient presented with a four month history of itchy wart-like lesions on her eyebrows. Seven months earlier she had undergone cosmetic eyebrow tattooing (also called permanent make-up). Examination revealed scattered dense grey papules, and polymerase chain reaction (PCR) test results of skin scrapings were positive for HPV18. Inoculated warts occur when HPV is introduced artificially into uninfected skin through a damaged epidermal barrier. In this case, the HPV was most likely present on the tattoo needle. Inadequate disinfection procedure and contaminated pigments or dyes are the main causes of wart inoculation, with the incidence of viral inoculation being 3.2% according to a US survey of tattoo complications in adults older than 18.

A careful history should be taken about cosmetic procedures, including tattooing, in patients presenting with atypical distribution of viral warts.

Lu Peng, Zhu Shen (zhushencq@hotmail.com),
Department of Dermatology, Sichuan Provincial People’s Hospital, Chengdu, China
Patient consent obtained.
Cite this as: BMJ 2021;374:n1790

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**Migraine and motion sickness**

People who get migraine often have motion sickness too. They are also more likely to report dizziness and nausea while watching videos of rollercoaster rides than people who don’t get migraines. When a virtual rollercoaster ride was combined with brain scanning, functional magnetic resonance imaging showed changes in neuronal activity in the occipital cortex and the middle frontal gyrus that correlated with migraine disability and motion sickness scores (Neurology doi:10.1212/WNL.000000000012443).

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**Alopecia areata**

A database study using UK electronic primary care records estimates the incidence of alopecia areata at 0.26 per 1000 person years. Peak onset occurred at age 25-29 in both sexes, although the peak was broader in women. People of non-white ethnicity, especially those of Asian ethnicity, had a higher incidence and weak associations were seen with social deprivation and urban living (Br J Dermatol doi:10.1111/bjd.20628).

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**Eosinophilia**

Possible causes of peripheral eosinophilia include allergic, infectious, inflammatory, and neoplastic disorders. What’s top of the list is likely to vary geographically, but in the north east US, neoplastic causes are commonest. In a case series of 200 people with an absolute eosinophil count of at least 5000/µL, 39% of cases were attributable to a haematological or an oncological cause and 20% of cases were secondary to drug reactions. Only 3% of cases were a result of helminthic infection, mostly in returning travellers (Am J Med doi:10.1016/j.amjmed.2020.11.022).

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**Neurodevelopment in children of women with epilepsy**

A multicentre study in the US found no differences in neurodevelopmental scores in the 2 year old children of women with epilepsy when compared with the children of women without epilepsy (JAMA Neurol doi:10.1001/jamaneurol.2021.1583). This suggests that the newer generation of anti-epileptic drugs is safer for the developing fetus than older drugs such as valproate and carbamazepine. Most of the women with epilepsy had taken lamotrigine or levetiracetam during pregnancy.

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**Hypoglycaemia**

Hypoglycaemic episodes severe enough to lead to hospital admissions in people with diabetes fell by more than half between 2003 and 2018, according to nationwide registry data from Denmark. This was true for people with type 1 and type 2 diabetes. The investigators attribute the improvement to the newer treatments that are replacing human insulin and sulphonylureas (Diabetologia doi:10.1007/s00125-021-05507-2).

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**Microbiome of centenarians**

An analysis of fecal samples shows that, compared with control groups of people aged 85 to 89 and 21 to 55, the gut microbiomes of Japanese centenarians are rich in strains of *Odoribacteraceae* (Nature doi:10.1038/s41586-021-03832-5). This group of bacteria generates secondary bile acids, in particular isoallolithocholic acid, from cholic andchenodeoxycholic acids. Isoallolithocholic acid has potent antimicrobial effects against Gram positive pathogens, including *Clostridiodes difficile* and *Enterococcus faecium*. Whether it contributes to longevity is another matter.

Cite this as: BMJ 2021;374:n1997