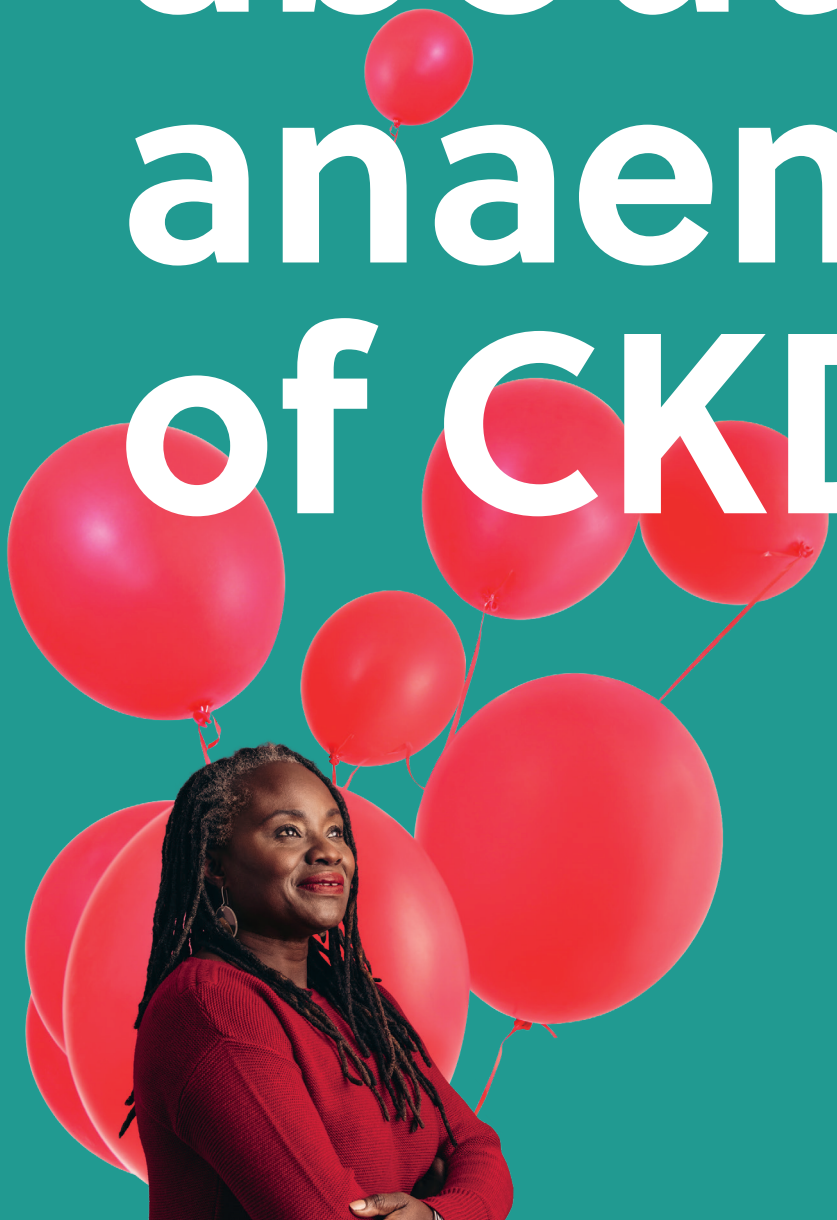
GSK



Things to know about anaemia of CKD





Educational booklet developed with the support of GSK



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Introduction

This booklet is for patients and carers.

It has been produced by Dynamo. The Dynamo programme brings together doctors who are experts in kidney disease, patient representatives and people involved in healthcare policy work from across Europe, with a vision of advancing care for patients who have anaemia as part of their chronic kidney disease (anaemia of CKD). Members of the European Anaemia CKD ALLIANCE are spearheading the Dynamo programme. They are committed to raising awareness of anaemia of CKD and challenging ourselves and others to think differently about the long-term management of anaemia of CKD for the benefit of patients.

The European Anaemia CKD ALLIANCE would like to acknowledge and thank the members for their contributions and professional expertise in developing this resource.

The European Anaemia CKD ALLIANCE and the Dynamo programme is an initiative sponsored and funded by GSK. Trademarks are owned by or licenced to the GSK group of companies.

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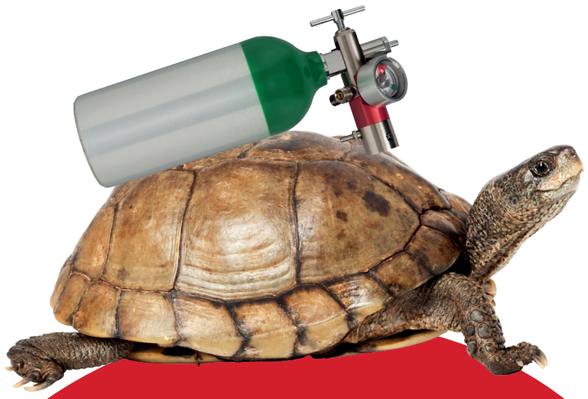
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1 What is anaemia?



Anaemia is when your body does not have enough of a substance called haemoglobin – often written as 'Hb'. Your body uses iron from food to make Hb.

Hb is used by red blood cells (RBCs) to carry oxygen around the body. When you have anaemia, your RBCs are not able to transport enough oxygen to where your body needs it.



CKD: a long-term condition when kidneys do not work as well as they should.

Haemoglobin: a protein in your red blood cells that carries oxygen. You say this as 'hee-ma-glow-bin'.

Anaemia can make you feel tired, short of breath and lightheaded. It can also increase the risk of heart disease, stroke, and other health problems.

Anaemia is common in people with chronic kidney disease (CKD). If you have CKD, it is important to talk to your doctor about how to delay and treat anaemia. This booklet gives you more information about anaemia of CKD (aCKD) and how it may be managed.

2 What is CKD and anaemia of CKD?



CKD

Kidney disease is when your kidneys do not work as they should. 'Chronic' means a condition that does not get completely better and lasts over a long time.

Anaemia of CKD

Your kidneys are involved in making RBCs. If you have CKD, your kidneys do not work well and your body may not produce enough RBCs to carry oxygen around the body.

If so, this is called 'anaemia of CKD' or 'aCKD', which is a common side effect of CKD. aCKD usually develops slowly and may cause few or no symptoms in the early stages.

The risk for anaemia increases as your CKD worsens (stages 3–5).

CKD is divided into 5 stages:

Stage 1

Your kidneys are still working well, so you may not have any symptoms. But there are some signs of kidney damage on tests.

Stage 2

Mild damage to your kidneys. Most of the time, your kidneys are still working well, so you may not have any symptoms.

Stage 3

Mild to moderate damage to your kidneys. Your kidneys do not work as well as they should to filter waste and extra fluid out of your blood.

Stage 4

Moderate to severe damage to your kidneys. Your kidneys do not work as well as they should to filter waste out of your blood. You may need additional medications to support loss of certain functions of the kidneys.

Stage 5

Your kidneys are getting very close to failure or have already stopped working (failed).

3 What causes anaemia of CKD?



aCKD can be caused in one or more ways.

Low EPO levels

Healthy kidneys release a hormone called erythropoietin (EPO).

EPO signals the body (specifically, the bone marrow) to produce RBCs.

If your kidneys are not working well, they do not produce enough EPO, and not enough RBCs are made.

EPO: a hormone made by the kidneys that helps the body make red blood cells. You say this as 'ih-rith-roh-poyi-tn'.

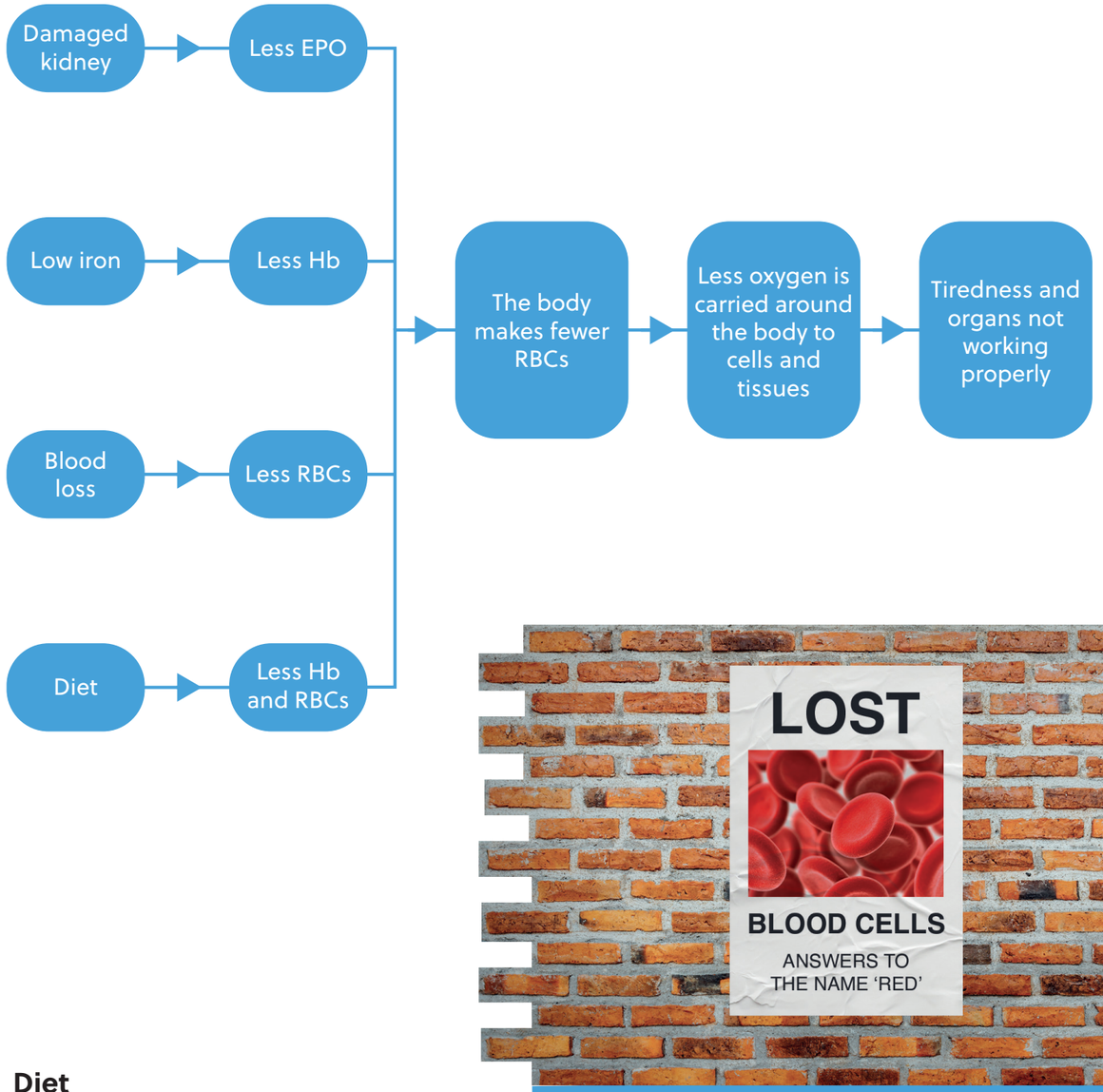
Low iron levels

If you have CKD, it is harder for your body to use the iron you get from food to make Hb.

Blood loss

Blood can be lost during dialysis. Also, some bleeding in the stomach and intestines can be caused by non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and aspirin, or anticoagulants.

Anticoagulants are drugs which prevent blood clots from forming. If you have CKD and are at risk of developing blood clots, your doctor will discuss which treatment is best for you.



Diet

Diet is important in both CKD and anaemia. Foods rich in iron, vitamin B12, and folate – essential nutrients to produce RBCs – can help if you have anaemia. But, these foods may also contain high levels of protein, sodium or phosphorus – which people with CKD may need to have less of.

To reduce your risk or symptoms of anaemia, talk to your doctor about:

- The best treatment for you (see also Section 8)
- Medications to avoid
- How you can have a healthy diet

4 What are the signs and symptoms of anaemia?

Signs and symptoms of anaemia can vary, and mild anaemia may not have any symptoms.



Common symptoms are:

- Feeling tired or weak
- Feeling breathless, especially when physical effort is needed
- Feeling lightheaded or dizzy
- Pale skin
- Cold hands or feet
- Headaches
- Chest pain
- Loss of appetite
- Difficulty concentrating and/or sleeping
- Fast heartbeat
- Irritability
- Frustration when you are unable to complete everyday tasks



You should talk to your doctor if you have any of these symptoms.

5 Why am I more likely to have anaemia?

The risk for anaemia increases as CKD worsens and as you get older.

If you have CKD and diabetes, you are at greater risk for anaemia.

If you have CKD and think you might have anaemia, talk to your doctor. They can test you for anaemia and recommend the best treatment.



How can I find out if I have anaemia?

6



Doctors will do blood tests to find out if you have aCKD, by checking Hb and other levels in your blood (such as iron, folate, vitamin B12 and the number and size of RBCs).

Your blood will be tested for anaemia more often as your CKD worsens over time because you will be more likely to get anaemia.

If you have CKD, it is important to check your blood for anaemia when your doctor recommends it. Early diagnosis and treatment can help prevent health problems.

Doctors will also look to see if you have any other conditions which may be causing anaemia.

Your doctor will check:

Medical history

- Your symptoms
- Current and past medical conditions
- Prescription medicines and over-the-counter medicines you take
- Your family history

Health-related quality of life

- How you feel your health is
- How often you have symptoms and how long they last
- How severe your symptoms are
- How your symptoms impact your daily life

Physical exam

- Your blood pressure
- Your heart rate
- For changes in skin colour, rashes, or bruising on your body

Folate and vitamin B12: are needed to make healthy red blood cells.



7 What treatments are available for anaemia?



If you have aCKD, your doctor may give you one or more of the following treatments.

It will depend on what is causing your anaemia and your stage of CKD.

Iron and supplements

If blood tests show that your blood contains too little iron, vitamin B12 or folate supplements can be taken as tablets, powders, injections or IV infusions.

Erythropoiesis-stimulating agent (ESA)

Given as injections to replace the EPO signal that your kidneys do not produce.

HIF-stabilisers

Given as tablets to help your kidneys produce EPO.

Blood transfusions

Can quickly increase the number of RBCs in your body and relieve the symptoms of anaemia for a short time.

Iron: a mineral you get from your food and an essential element for making Hb.

IV infusions: medicines given into a vein (intravenous; IV), sometimes called a 'drip'.

Your healthcare team will work with you to choose your best treatment, such as daily pills taken at home or regular injections or infusions in a hospital or clinic.

Talk to your doctor if you have any questions or concerns about the treatment.

As with all medicines, some people will have side effects or treatment may not work as well as expected.

You can talk to your doctor about ways of reducing side effects.

Getting treatment for aCKD is important, otherwise it can lead to serious health problems.



8 How can treatment help me?

Treating anaemia helps your body to produce more RBCs to better deliver oxygen around the body.

This can slow symptoms from worsening, such as tiredness and shortness of breath.

Treating your anaemia may help:

- You have more energy to do your daily tasks
- Your quality of life to get better
- You to be able to exercise
- Your appetite

Treating anaemia can also:

- Help with your CKD – by increasing the amount of oxygen delivered around the body, making it easier for your kidneys to function
- Reduce your risk of heart disease – because your heart does not have to work as hard to push blood around your body to deliver the right amounts of oxygen
- Reduce your risk of stroke by allowing more blood to flow to the brain
- Reduce your risk of infection by supporting the body's natural defense – the immune system.



Talk to your doctor about the benefits and risks of treatment.

Together, you can decide what is the best treatment for you.

9 What is your journey from diagnosis to treatment?

The patient journey for aCKD can vary from person to person. However, there are some common steps that most people will go through.



> When I look back, I was tired, but then we were doing so many things at one time, I put it down to that.

1 CKD diagnosis

GP then refers you to a kidney disease expert (a nephrologist, you say this 'neff-rol-o-jist').

You may or may not have symptoms of anaemia. Blood tests will check if you do. If you have anaemia, the doctor will work with you to develop a treatment plan.



3 Dialysis

If you are on dialysis, your anaemia could be treated with iron supplements and/or ESAs or HIF-stabiliser treatment.

ESA treatment and iron can be given via the dialysis machine.

Iron supplements may be given as IV infusions.

2 Start treatment for anaemia

The type of treatment will depend on how severe your anaemia is and if you are having dialysis treatment.



Iron may be given as a tablet or as an IV infusion especially if you receive dialysis.

ESA treatment can be injected just underneath your skin. ESA injections can also be done at home. You can inject yourself, or a family member or nurse can do it.

HIF-stabilisers can be taken as a pill.

Sometimes, a blood transfusion may be recommended.

For mild anaemia

You may not need any treatment, particularly if you do not have any symptoms. If you are low on vitamin B12 or folate, your doctor may prescribe supplements as tablets or injections.

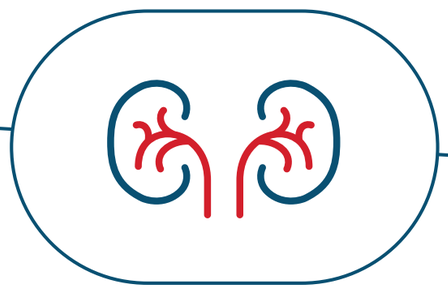
For more severe anaemia

The main treatments are iron supplements and, if needed, ESA or HIF treatment.

4 Transplant

If you have a kidney transplant, your new kidney may still not be able to generate enough EPO to produce sufficient RBCs.

Some medicines you take can also affect the amount of EPO your body makes. Anaemia treatment may be needed even after a successful transplant.



The patient journey for aCKD can be challenging and is not the same for everyone.

Still, it is important to remember that there are effective treatments available.

If you have been diagnosed with aCKD, you are not alone.

Many people are going through the same thing. Patients can manage their condition and live a full and active life with the proper care and support.

10 What healthcare team members might I see?

The healthcare team, that are pulling together for someone with aCKD may be made up of:



Nurse

A nurse can give you education and support about your condition. They can also help you manage your treatment with the doctor, and check your symptoms.

Dietitian

A dietitian can help you create a healthy diet tailored to your needs. This might include foods that contain iron, vitamin B12, or folate. They can answer questions about what food you can eat.

General practitioner (GP) or family doctor

Usually the first person you go to if you have a health issue.

Nephrologist

A nephrologist is a doctor who specialises in treating kidney disease. They will oversee your care.

Social worker

A social worker can help you with practical matters, such as advice on financial aid you may be able to claim. They can also provide emotional support.

The members of your healthcare team may vary depending on your needs. However, these providers will work together to give you the best possible care.

11 Symptom tracker

Take note of your symptoms and how they affect your daily life.

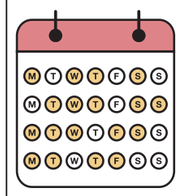
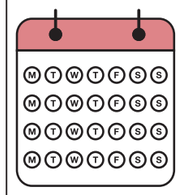
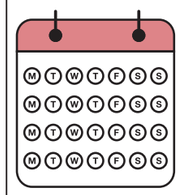
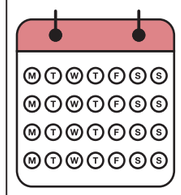
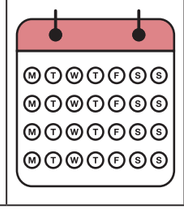
These notes can help to focus your talks with your doctor on what is most important for you in managing your disease.

The first row has been filled in as an example.

Prompts for symptom tracker

- I never have enough energy
- I feel weak
- I feel tired
- I feel like I have “brain fog”
- It feels like my heart is beating too fast
- Sometimes my heart skips beats
- I get short of breath
- I have headaches
- I am not sleeping very well
- My appetite has decreased
- My hands and feet won’t stay warm
- I feel dizzy
- I sometimes feel sad
- It’s hard to do everyday tasks like make a sandwich or walk upstairs

Notes

Symptom	When did the symptoms occur? Colour in how many days you have experienced this in the last month	How severe does this feel? Mild/moderate/severe	Does anything trigger this symptom?	What impact does this have on your daily life?
Feeling tired		**Mild**	**Physical exercise**	**I can’t walk the dog as far as I used to in the morning**
				
				
				
				

12 What matters to me?





Think about what matters to you.

The questions below may help you consider what is important in your daily life and how this can be achieved by managing your disease.

Discuss these points with your doctor so they can provide you with the care that matters to you.

- **What is important to you about your work or study?**
- **What is important to you about your relationship with your partner?**
  (For example, have a healthy sex life)
- **What is important to you about your relationships with family and friends?**
  (For example, play with your grandchildren)
- **What is important to you about your leisure time and hobbies?**
  (For example, walk your dog or go to bingo)
- **What is important to you about holidays and travel?**
  (For example, be able to go on holiday abroad)
- **How do you feel about being in charge of your own life?**
  (For example, feeling you rely on someone else)
- **How do you feel about being able to do things for yourself?**
  (For example, collect prescriptions or drive to appointments)

Use this space to reflect on the points and use them in discussions with your doctor.

13 What should I ask my doctor?

Your doctor and healthcare team can answer questions about your symptoms and treatment options.

We can help you get the conversation started.

Questions you may want to ask your doctor...



Tell the doctor how you feel and ask any questions you may still have. Use the space below to prepare a list beforehand to help you remember everything.

14

How can caregivers support?



Caring for your loved one with CKD can be rewarding but challenging.

Especially if they develop anaemia and need more medical visits.

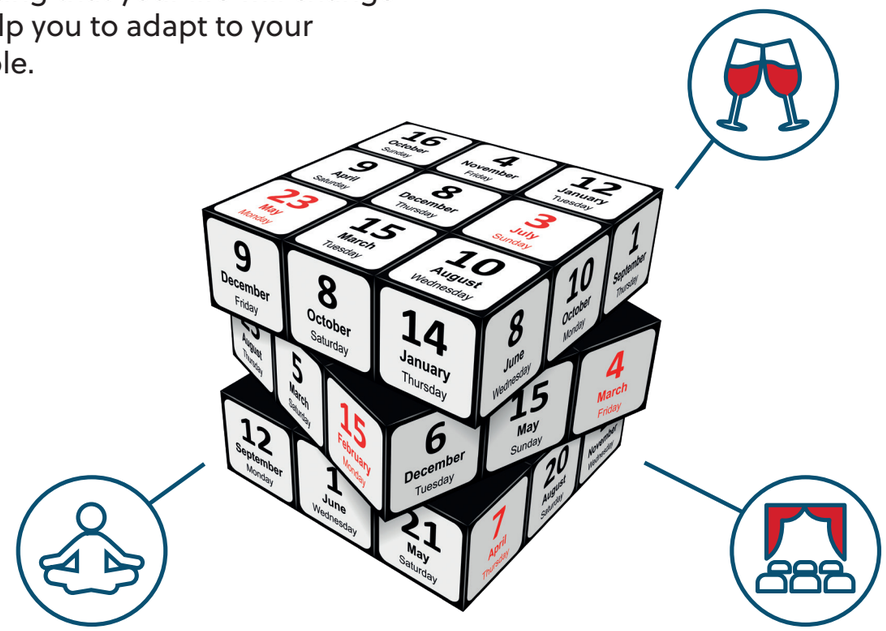
You may feel anxious about your loved one being ill or being able to help and support them. This is normal.

Accepting that your life will change will help you to adapt to your new role.

You may take on new tasks:

- Household chores
- Paying bills
- Helping your loved one with getting dressed.

Friends and neighbours may support with shopping, housework, or travel to medical appointments.



Please take note of your loved ones new symptoms, such as cold or flu symptoms, changes in sleep, mood or ability to do things, to share with their doctor.

You may have more time apart from your loved one if they have dialysis in the hospital. Plan things to do in this time that you look forward to, like seeing friends or a yoga class, and not just chores.

You may be trained to help if dialysis is being done at home, and you'll need a clean, dry place to store supplies and a new routine.

Think about changing your working hours or jobs to give yourself more time and reduce stress.

Talk to the doctor about what an 'urgent' medical need is and what to do if one arises.

Take regular 'me' time without feeling guilty, known as 'respite'.

Taking care of yourself is important. Join a carer's support group (see the list on page 26) or ask your doctor about counselling.

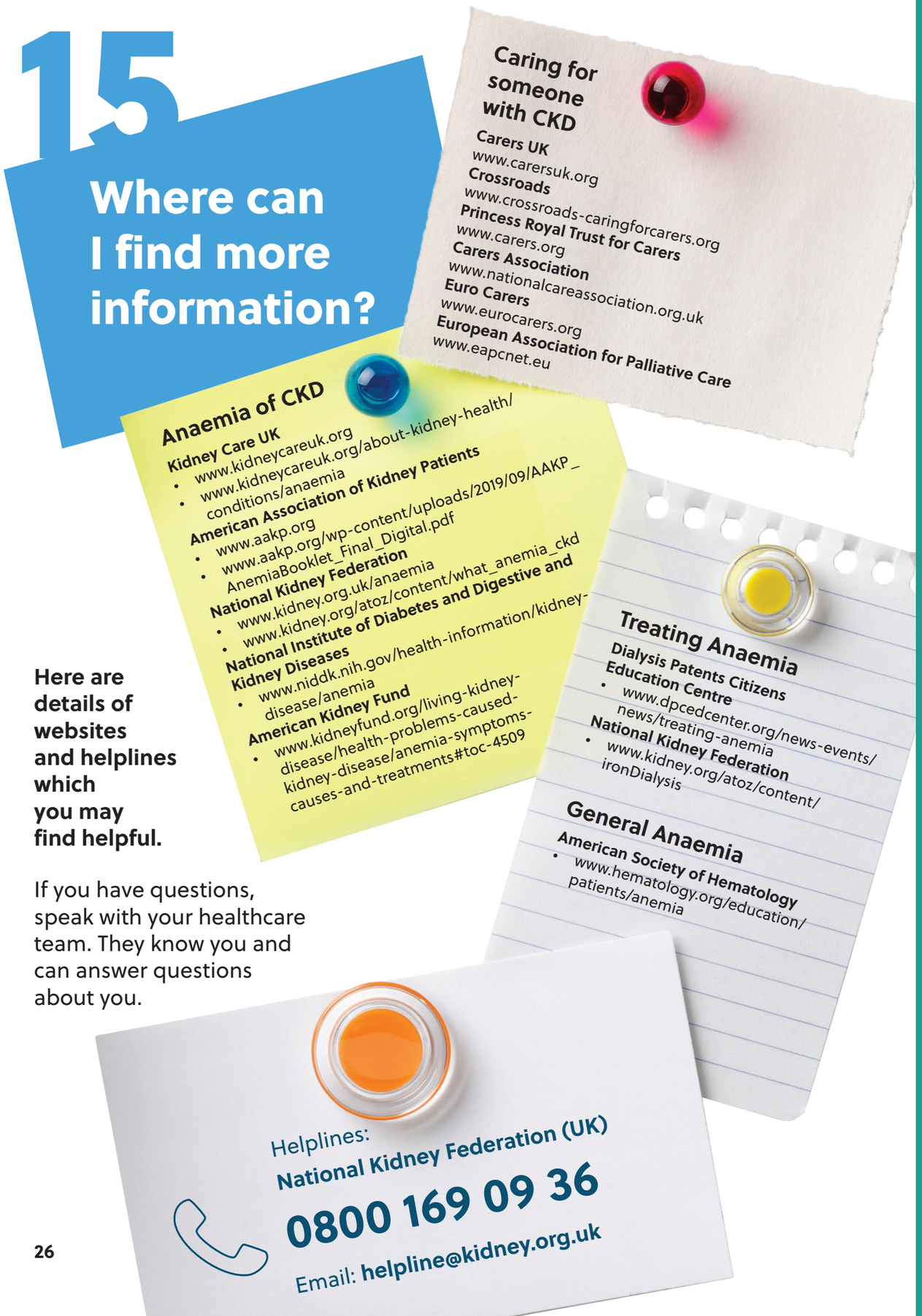
Not everyone has a carer. A social worker can help if you need someone to talk to, and to help out with practical matters such as where to go for advice on money matters.

Carer: a family member or close friend who provides unpaid care to a loved one with CKD.

15 Where can I find more information?

Here are details of websites and helplines which you may find helpful.

If you have questions, speak with your healthcare team. They know you and can answer questions about you.



References

ABRAMSON, J. L., JURKOVITZ, C. T., VACCARINO, V., WEINTRAUB, W. S. & MCCLELLAN, W. 2003. Chronic kidney disease, anemia, and incident stroke in a middle-aged, community-based population: the ARIC Study. Kidney Int, 64, 610-615.

BAKER, L. A., MARCH, D. S., WILKINSON, T. J., BILLANY, R. E., BISHOP, N. C., CASTLE, E. M., CHILCOT, J., DAVIES, M. D., GRAHAM-BROWN, M. P. M., GREENWOOD, S. A., JUNGLEE, N. A., KANAVAKI, A. M., LIGHTFOOT, C. J., MACDONALD, J. H., ROSSETTI, G. M. K., SMITH, A. C. & BURTON, J. O. 2022. Clinical practice guideline exercise and lifestyle in chronic kidney disease. BMC Nephrol, 23, 75.

BATCHELOR, E. K., KAPITSINOU, P., PERGOLA, P. E., KOVESDY, C. P. & JALAL, D. I. 2020. Iron Deficiency in Chronic Kidney Disease: Updates on Pathophysiology, Diagnosis, and Treatment. J Am Soc Nephrol, 31, 456-468.

BETTS, J. G., DESAIX, P., JOHNSON, E., JOHNSON, J. E., KOROL, O., KRUSE, D., POE, B., WISE, J. A., WOMBLE, M. & YOUNG, K. A. 2022. Anatomy and Physiology. Rice University: OpenStax.

CARROLL, L. E. 2006. The stages of chronic kidney disease and the estimated glomerular filtration rate. The Journal of Lancaster General Hospital, 1, 64-69.

CHEN, T. K., KNICELY, D. H. & GRAMS, M. E. 2019. Chronic Kidney Disease Diagnosis and Management: A Review. JAMA, 322, 1294-1304.

DALGAARD, F., MULDER, H., WOJDYLA, D. M., LOPES, R. D., HELD, C., ALEXANDER, J. H., DE CATERINA, R., WASHAM, J. B., HYLEK, E. M., GARCIA, D. A., GERSH, B. J., WALLENTIN, L., GRANGER, C. B. & AL-KHATIB, S. M. 2020. Patients With Atrial Fibrillation Taking Nonsteroidal Anti-Inflammatory Drugs and Oral Anticoagulants in the ARISTOTLE Trial. Circulation, 141, 10-20.

ELENDU, C., ELENDU, R. C., ENYONG, J. M., IBHIEDU, J. O., ISHOLA, I. V., EGBUNU, E. O., MERIBOLE, E. S., LAWAL, S. O., OKENWA, C. J., OKAFOR, G. C., UMEH, E. D., MUTALIB, O. O., OPASHOLA, K. A., FATOYE, J. O., AWOTOYE, T. I., TOBIH-OJEANELO, J. I., RAMON-YUSUF, H. I., OLANREWAJU, A., AFUH, R. N., ADENIKINJU, J., AMOSU, O. & YUSUF, A. 2023. Comprehensive review of current management guidelines of chronic kidney disease. Medicine (Baltimore), 102, e33984.

GALLAGHER, P. G. 2022. Anemia in the pediatric patient. Blood, 140, 571-593.

GELAW, Y., GETANEH, Z. & MELKU, M. 2021. Anemia as a risk factor for tuberculosis: a systematic review and meta-analysis. Environ Health Prev Med, 26, 13.

GHRAYEB, H., ELIAS, M., NASHASHIBI, J., YOUSSEF, A., MANAL, M., MAHAGNA, L., REFAAT, M., SCHWARTZ, N. & ELIAS, A. 2020. Appetite and ghrelin levels in iron deficiency anemia and the effect of parenteral iron therapy: A longitudinal study. PLoS One, 15, e0234209.

GROUP., K. D. I. G. O. K. A. W. 2012. KDIGO Clinical Practice Guideline for Anemia in Chronic Kidney Disease. Kidney International Supplements, 2, 279-335.

HANNA-RIVERO, N., TU, S. J., ELLIOTT, A. D., PITMAN, B. M., GALLAGHER, C., LAU, D. H., SANDERS, P. & WONG, C. X. 2022. Anemia and iron deficiency in patients with atrial fibrillation. BMC Cardiovasc Disord, 22, 204.

ISEKI, K. & KOHAGURA, K. 2007. Anemia as a risk factor for chronic kidney disease. Kidney Int Suppl, S4-S9.

KALANTAR-ZADEH, K., JAFAR, T. H., NITSCH, D., NEUEN, B. L. & PERKOVIC, V. 2021. Chronic kidney disease. Lancet, 398, 786-802.

KEMS, A. 2022. Types and Symptoms of Anaemia. Journal of Interdisciplinary Histopathology, 10, 4.

KU, E., DEL VECCHIO, L., ECKARDT, K. U., HAASE, V. H., JOHANSEN, K. L., NANGAKU, M., TANGRI, N., WAIKAR, S. S., WIECEK, A., CHEUNG, M., JADOUL, M., WINKELMAYER, W. C., & WHEELER, D. C.; FOR CONFERENCE PARTICIPANTS. 2023. Novel anemia therapies in chronic kidney disease: conclusions from a Kidney Disease: Improving Global Outcomes (KDIGO) Controversies Conference. Kidney Int, 104, 655-680.

LEVEY, A. S., ECKARDT, K. U., TSUKAMOTO, Y., LEVIN, A., CORESH, J., ROSSERT, J., DE ZEEUW, D., HOSTETTER, T. H., LAMEIRE, N. & EKNOYAN, G. 2005. Definition and classification of chronic kidney disease: a position statement from Kidney Disease: Improving Global Outcomes (KDIGO). Kidney Int, 67, 2089-2100.

LOCATELLI, F., DEL VECCHIO, L. & ELLIOTT, S. 2023. The anaemia treatment journey of CKD patients: from epoetins to hypoxia-inducible factor-prolyl hydroxylase inhibitors. Clin Kidney J, 16, 1563-1579.

MALEK, M. 2018. Brain consequences of acute kidney injury: Focusing on the hippocampus. Kidney Res Clin Pract, 37, 315-322.

MATHIAS, S. D., BLUM, S. I., SIKIRICA, V., JOHANSEN, K. L., COLWELL, H. H. & OKORO, T. 2020. Symptoms and impacts in anemia of chronic kidney disease. J Patient Rep Outcomes, 4, 64.

MIKHAIL, A., BROWN, C., WILLIAMS, J. A., MATHRANI, V., SHRIVASTAVA, R., EVANS, J., ISAAC, H. & BHANDARI, S. 2017. Renal association clinical practice guideline on Anaemia of Chronic Kidney Disease. BMC Nephrol, 18, 345.

NIE, G. Y., WANG, R., LIU, P., LI, M. & SUN, D. J. 2021. Mild Anemia May Affect Thyroid Function in Pregnant Chinese Women During the First Trimester. Front Endocrinol (Lausanne), 12, 772917.

PORTOLÉS, J., GORRIZ, J. L., RUBIO, E., DE ALVARO, F., GARCÍA, F., ALVAREZ-CHIVAS, V., ARANDA, P., MARTINEZ-CASTELAO, A. & GROUP, N.-S. 2013. The development of anemia is associated to poor prognosis in NFKK_KDOQI stage 3 chronic kidney disease. BMC Nephrology, 14, 2.

PORTOLES, J., MARTIN, L., BROSETA, J. J. & CASES, A. 2021. Anemia in Chronic Kidney Disease: From Pathophysiology and Current Treatments, to Future Agents. Front Med (Lausanne), 8, 642296.

REYES-LOPEZ, M. A., PICCOLI, G. B., LEONE, F., OROZCO-GUILLEN, A. & PERICHART-PERERA, O. 2020. Nutrition care for chronic kidney disease during pregnancy: an updated review. Eur J Clin Nutr, 74, 983-990.

STAUFFER, M. E. & FAN, T. 2014. Prevalence of anemia in chronic kidney disease in the United States. PLoS One, 9, e84943.

VENKATESH, K., ALAGUNDAGI, S. S., GARG, V., PASALA, K., KARIA, D. & ARORA, M. 2022. DripOMeter: An open-source opto-electronic system for intravenous (IV) infusion monitoring. HardwareX, 12, e00345.

WECKMANN, G., KIEL, S., CHENOT, J. F. & ANGELOW, A. 2023. Association of Anemia with Clinical Symptoms Commonly Attributed to Anemia-Analysis of Two Population-Based Cohorts. J Clin Med, 12, 921.

YANG, Y., YU, B. & CHEN, Y. 2015. Blood disorders typically associated with renal transplantation. Front Cell Dev Biol, 3, 18.

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