



Protecting against infection

Life after a transplant

Foreword

Dear patient,

we wish you all the best for the future after your organ transplant. You may have waited a long time for it and have had many hospital stays. After these taxing times, the donor organ will, hopefully, now allow you to return to a more active and more independent everyday life.

You are reliant on medication (immunosuppressants) to make life with your new organ possible. These help your body's own immune system not to reject the new organ. It is, therefore, very important that you always have a plentiful supply of your medication on hand, particularly when you are travelling.

You will become more susceptible to infection by taking the immunosuppressants. Nevertheless, you will be able to enjoy having your new organ for a long time without encountering any complications as long as you adhere to some dos and don'ts to protect against infection. In this information brochure, we would like to give you a few tips for the future to protect your health and how you can dispel any worries and concerns you may have.

A good level of cooperation between you and the doctors looking after your treatment is particularly important following your transplant. The effective concentration of the immunosuppressants will be monitored regularly by taking blood samples in order to keep the risk of rejection but also that of infection to a minimum. Therefore, you should attend your check-ups regularly and contact your transplant centre if you encounter any new complications.

Please remember that individual and centre-based approaches may vary and not all the advice provided here is universally applicable.

We wish you all the best with your new donor organ.

Yours sincerely,

Kerstin Herzer and Elisabeth Schieffer

Company details

Content Chiesi GmbH, Hamburg · www.chiesi.de · Advisory support by Prof. Dr. med. Kerstin Herzer · Uniklinikum Essen · kerstin.herzer@uk-essen.de · Dr. med. Elisabeth Schieffer · MH Hannover · Schieffer.Elisabeth@mh-hannover.de · Editing and design KW MEDIPOINT, Bonn · www.kwmedipoint.de

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Immunosuppression – What is it?

- During immunosuppression treatment, the body's own immune system is "powered down" by special medication – immunosuppressants – designed to prevent rejection of the transplanted organ.
- The correct dose of immunosuppressants is very important. If it is too high, a patient may experience side effects – if it is too low, there is an increased risk of your new organ being rejected.
- Your doctor will take regular blood samples from you in order to monitor the level of the medication.

In this brochure, we would like to explain the possible risks of infection to you, which should help you to recognise and avoid sources of infection. This is only a collection of pieces of advice. Please discuss all medical issues with your doctor. If you adhere to some dos and don'ts, you will be able to look forward to returning to a more normal everyday life.

What risks are associated with taking immunosuppressants?

- You are at an increased risk of contracting infection due to the suppression of your immune system.
- Infections can be caused by bacteria, viruses or fungi.
- There is an increased risk of developing some cancers.
- You may develop an intolerance to the immunosuppressants or impaired kidney function.
- You may also experience increased blood sugar levels while you are taking the immunosuppressant medication. It also increases the risk of developing diabetes.

Go for regular check-ups at your transplant centre!



Transplantation and protection against infection

What kinds of infection can occur?

- Increased risk of urinary tract infections, e.g. with a urinary catheter
- Wound infections as a result of delayed wound healing
- Fungal infections in the mouth or genital area
- Athlete's foot or genital warts after visiting a swimming pool
- Increased risk of infection with pathogens which are generally harmless for healthy individuals
- Gastrointestinal tract infections (compensate for loss of fluids!)
- Pneumonia

Note:

- A rise in body temperature can be a sign of an infection. However, other causes must be considered and investigated in the event of a persistent fever of 38°C (e.g. rejection reaction or internal medical conditions).
- If you develop a gastrointestinal infection with diarrhoea and vomiting, the effectiveness of immunosuppressants may be compromised.

Contact your doctor immediately at the first signs of fever!



Food hygiene

Can foodstuffs carry a potential risk of infection?

- As the body's own immune system is constrained as a result of the immunosuppressive therapy, infections from microbes in food must be avoided.
- Therefore, during the initial 3–6 months after the transplant procedure in particular, a low-microbe diet should be implemented, as the body is particularly vulnerable during this period due to the transition and the medication.
- The implementation of a low-microbe diet also includes the selection of certain foods as well as their transport, storage and preparation.



What types of food can be consumed on a low-microbe diet?

- Boiled water, tea, coffee and industrially bottled drinks are low in microbes and are suitable for drinking. Juices and other sweetened drinks, however, should only be consumed in moderation.
- Meat, poultry and fish products which have been heated to sufficient temperatures may be eaten.
- The meal plan may also include all milk products, as long as they are pasteurised.
- Only consume fruit and vegetables that have been washed and/or peeled.



You should try to ensure that you have a balanced, healthy and low-microbe diet in order to offer your new organ optimal support.



- Avoid fresh, unprocessed pulses, nuts and seeds, as these may be contaminated with invisible mould fungus.
- Avoid ice-cream with an interrupted cold chain. This is associated with an increased risk of salmonella infection.

Which products should I avoid on a low-microbe diet?

- Avoid opened drinks, unfiltered or inadequately heated tap water.
- Raw foods or meals containing raw products (e.g. eggs, raw milk products, tiramisu etc.) should be avoided.
- Raw meat (e.g. Mett [minced pork with raw onion]) and raw fish (e.g. sushi) as well as raw sausage products, raw or air-dried ham (e.g. Parma ham) and smoked sausage products in particular should be avoided.
- Packets of muesli should be consumed as soon as possible after opening. Microbes and fungi can multiply during extended storage. Therefore, it is preferable to purchase small packets.
- Avoid foods with edible mould (e.g. camembert).
- Avoid raw mushrooms and sprouts.





What should I be aware of when I go shopping and when I store food products?

- Buy fresh food and use it up quickly, so for that reason buy the smallest portions possible.
- Avoid storing meals and leftovers over long periods.
- Transport highly perishable products in a cool bag.
- Ideally, store cheese and cold meats in closed containers.
- Fish, poultry and meat should not be stored beside other raw foodstuffs such as fruit and vegetables.



What is important to remember when preparing meals?

- Raw fruit and vegetables should be washed thoroughly and subsequently peeled if necessary before you consume them. Avoid fruit with brown patches and flaws.
- Heating meals kills microbes. It is therefore important to cook fish and meat thoroughly (at least 70°C).
- Do not cut off mould where it is spread over a large surface area; throw away any affected foods immediately instead.
- Defrost frozen goods in the fridge; defrost water should not come into contact with other food-stuffs.
- Always wash your hands before and after food preparation.
- Change dishcloths regularly and wash tea towels at temperatures of at least 60°C.
- Always clean work surfaces as well as cooking and chopping utensils thoroughly.
- Use a chopping board made from glass and not from wood or plastic.
- Clean your fridge regularly.



A low-microbe diet includes the use of fresh ingredients, correct storage and preparation and adequate hygiene practices!

Foodstuffs

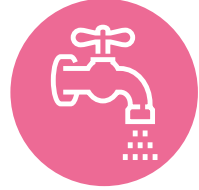
Peelable, washed, unspoiled
fruit and vegetables



Heated, peeled and
vacuum-packed nuts and seeds



Tap water (without boiling),
public water dispensers,
opened drinks, ice cubes made
from tap water



Mineral water, drinks from
closed containers, tea



Animal-sourced raw milk
products (e.g. raw milk cheese,
non-heat-treated milk etc.)



Adequately heated
animal products



Raw or air-dried animal
products (e.g. meat, fish, eggs,
Parma ham etc.)



Pasteurised milk products
Products without edible mould



Unpeeled, unwashed fruit and
vegetables/fruit and vegetables
with brown patches and flaws



Ice-cream with an interrupted
cool chain



Care of indoor and garden plants

What risks are associated with the care of indoor and garden plants?

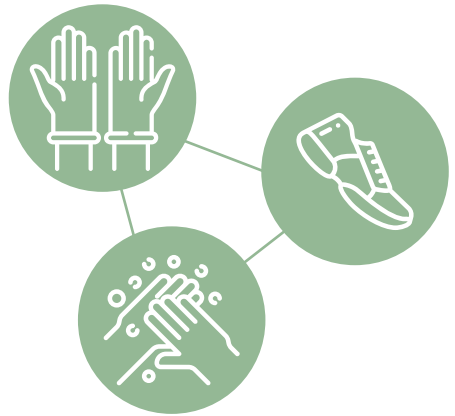
- Soil and compost, as well as the water from cut flowers, contain a multitude of microbes which can be absorbed via small cuts on the skin and through the airways. For this reason, transplant recipients are at an increased risk of infection.

If you observe some dos and don'ts, it is possible to care for your indoor and garden plants!



What is important to be aware of when caring for indoor and garden plants?

- Due to the elevated microbial load, it is recommended that you wear protective gloves when caring for your indoor and garden plants in order to avoid grazing your skin.
- Particularly during the initial months after your transplant, you should avoid repotting and changing the water of plants as well as dust swirling up from the earth.
- Wash your hands thoroughly after working.
- Be careful that you do not incur any cuts on your feet during the summer. This can be an entry route for microbes. You should therefore avoid going barefoot outside.



Contact with animals

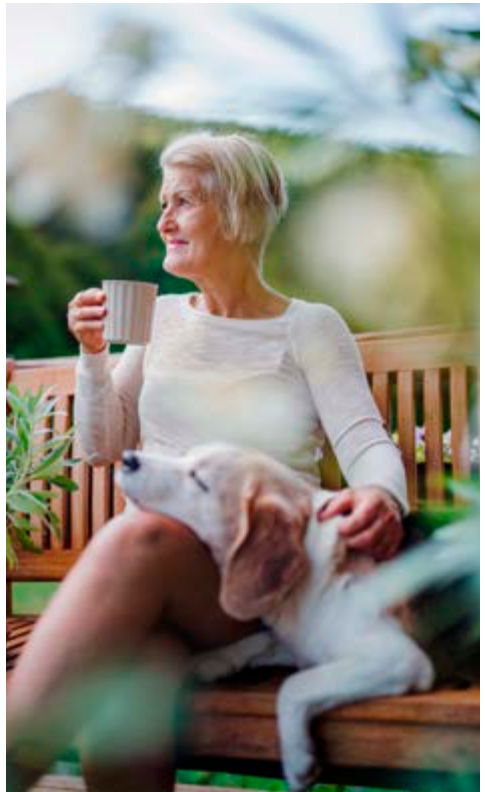
May I keep pets?

- In principle you may keep pets. Ensure that your pets are regularly checked by the vet for parasites, worms and other pathogens.
- However, you should avoid acquiring new pets during the first six to twelve months following your transplant.
- Caution is advised when keeping cats (toxoplasmosis), parrots (psittacosis), reptiles and chicks.

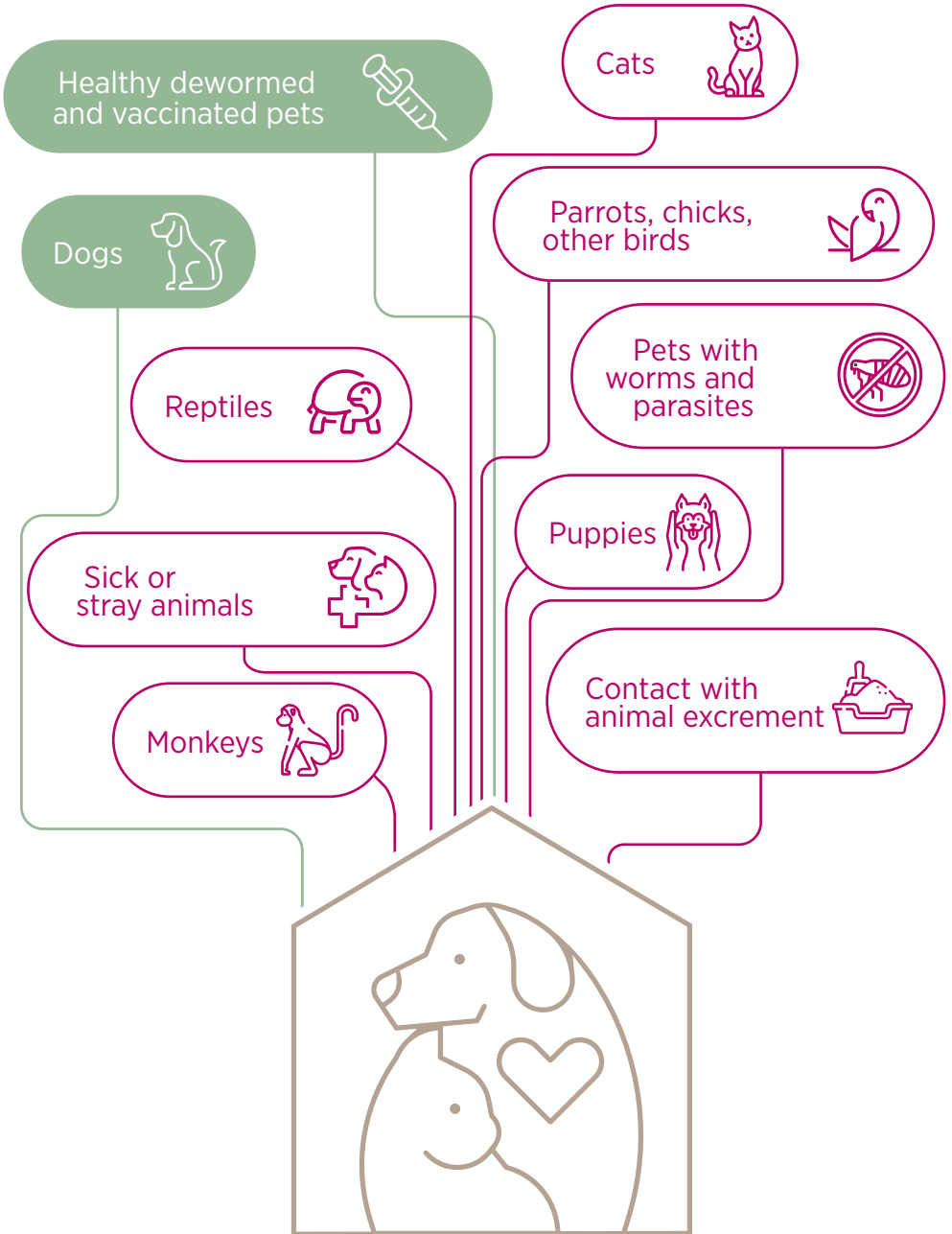
What should I be aware of when handling animals?

- Wash and, if necessary, disinfect your hands thoroughly after all contact with animals.
- Avoid contact with animal excrement (e.g. cleaning the cat litter) and proximity to birds. If this is not possible, wear protective gloves and a mask over your mouth.
- Avoid contact with stray animals.

Pets are not taboo! However, choosing a suitable pet and adhering to some dos and don'ts is important in order to minimise the risk of infection!



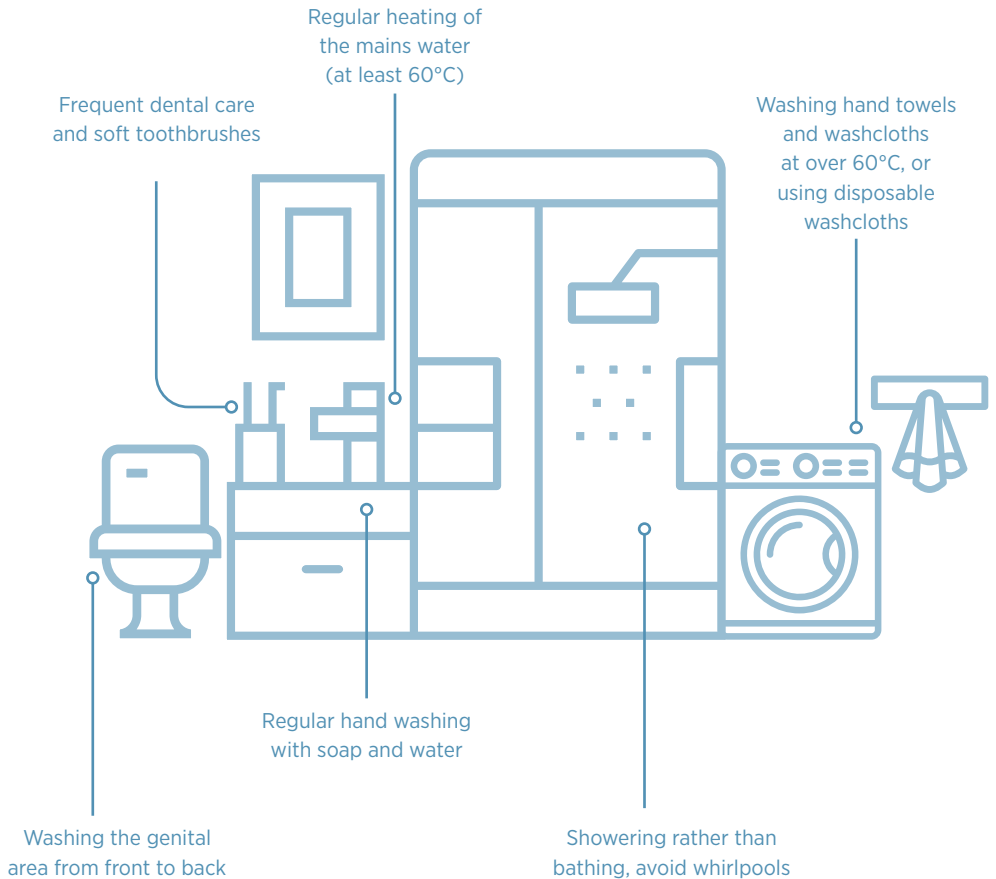
Contact with animals



Bodily hygiene

What bodily hygiene measures can I take?

- Daily personal hygiene is essential in order to reduce the risk of bacterial, viral or fungal infections (e.g. to prevent infections via the urinary tract).
- Be vigilant about thorough dental hygiene and clean your teeth at least twice a day.
- Avoid the use of contaminated water for bodily hygiene.



Hygiene tips to avoid infection

- Wash your hands regularly with soap.
- When you are travelling or out and about, take a hand disinfectant spray with you (disinfect your hands each time you touch door handles, shopping trolleys etc.).
- Disinfect your feet thoroughly after visiting the swimming pool or sauna.
- Avoid shaking hands.
- Shower yourself off after you have taken a bath.
- Wash your genital area from front to back in order to avoid intestinal bacteria from ascending into the urinary tract.
- Heat the mains water once a week to at least 60°C in order to prevent bacteria multiplying in your water supply facilities (e.g. shower).
- Use only hygienic hand towels and washcloths (wash at over 60°C or use disposable washcloths).
- Clean your teeth after every meal; preferably choose soft toothbrushes in order to avoid cuts to your gums.
- Avoid cutting yourself when shaving or during your nail care routine.



Maintain a thorough bodily hygiene routine in order to prevent infection!

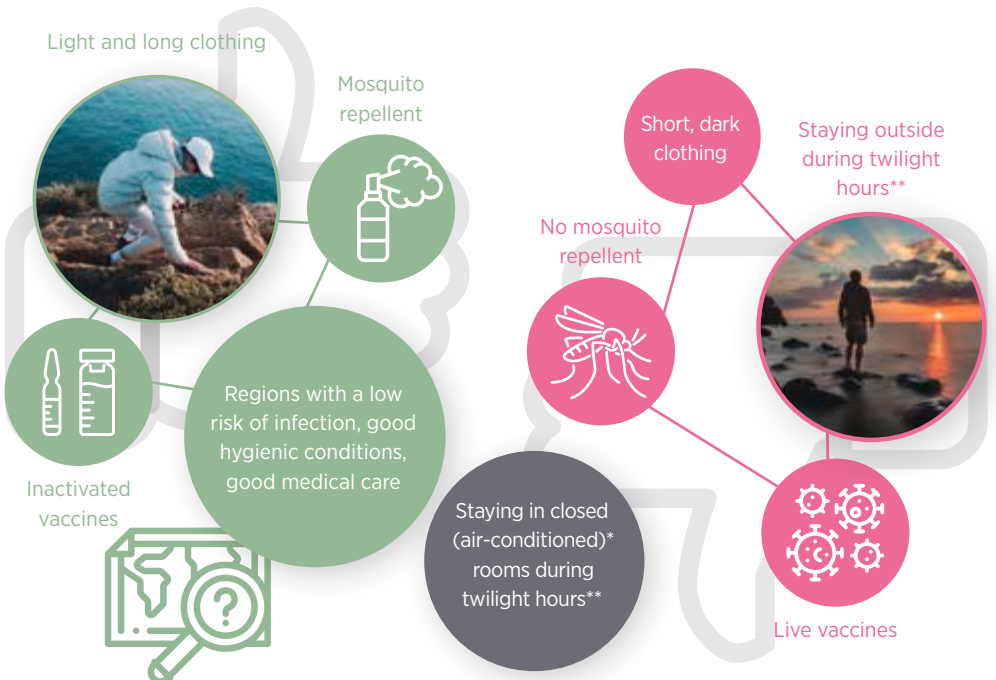
Vaccinations/Travel precautions

Can I be vaccinated after a transplant?

- Transplant recipients are recommended to have themselves vaccinated regularly against some infections (e.g. flu, pneumonia)
- Enquire about vaccination with inactivated vaccines – their effectiveness can be suppressed by immunosuppressants.
- Live vaccines (e.g. against measles, mumps and rubella [MMR], yellow fever, flu vaccine via the nose etc.) should not be used after a transplant as the recipient may develop an infection with the weakened pathogens as a result of the immunosuppression therapy.



Regular vaccinations are recommended to protect against infection!



*Caution: air-conditioning may keep mosquitos at bay, but only limited use is recommended, as there is the risk of over-cooling and the proliferation of bacteria. **Caution: even mosquitos active during the daytime can transmit infectious diseases.

How can I protect myself against infection when I am travelling?

- Ask your treating doctor or tropical/travel medicine specialist about possible risks for infection and required vaccinations before the start of your foreign travel.
- Travelling in regions with an increased incidence of malaria as well as poor hygiene conditions (gastrointestinal infections) is generally associated with an increased risk of infection. Enquire about a course of malaria tablets at a travel medicine advice centre.
- You can protect yourself even more when you are travelling by taking appropriate preventative measures such as mosquito repellent, light and long clothing, air-conditioning and mosquito nets.
- Avoid tap water and raw foodstuffs, as well as salad that has been washed using tap water.
- Don't clean your teeth with tap water, instead only use water from closed bottles.
- Follow the current vaccination recommendations by the Ständige Impfkommission (Standing Committee on Vaccination) (STIKO) for your destination country.



If you adhere to certain hygiene and preventative measures, prepare thoroughly for your journey, and source information on travel medicine, there is nothing to stop you travelling!

Additional infection protection measures

What other protective measures can I take in everyday situations?

- After a transplant, you and your partner should take care during sexual intercourse to reduce the risk of infection by washing and, if applicable, using individually packed aids and protection.
- A permanent sexual partner is preferable (monogamy) in order to minimise the risk of sexually transmitted diseases.

- Employ more intensive hygiene measures when you are out in public, e.g. frequent hand disinfection.
- Avoid close contact with individuals who have an infectious disease.

Preferably, choose locations and contacts with a low risk of infection!



Glossary

- **Immunosuppression:** In immunosuppression therapy, the body's own immune system is artificially suppressed by taking special medication - immunosuppressants.
- **Psittacosis:** Psittacosis, also known as "parrot disease", refers to an infectious bacterial disease that can be transmitted via animal excrement to humans and is accompanied by flu-like symptoms.
- **Toxoplasmosis:** Toxoplasmosis is a global infectious parasitic disease in cats, that can be transmitted to humans. It can cause serious illness (e.g. inflammation of the brain [encephalitis]) in immunocompromised individuals.

Additional information

AKTX Pflege e. V.

<https://www.transplantationspflege.de>

Arbeitskreis Nierentransplantation

(Kidney Transplant Task Force)

<https://www.nieren-transplantation.com>

Auswärtiges Amt – Reise- und Sicherheitshinweise

(Federal Foreign Office – Travel and Safety Information)

<https://www.auswaertiges-amt.de/de/ReiseUndSicherheit/reise-und-sicherheitshinweise>

Bundesverband der Organtransplantierten e. V.

(Federal Association of Organ Transplant Recipients)

<https://bdo-ev.de/bdo>

Bundesinstitut für Risikobewertung

(Federal Institute for Risk Assessment)

https://www.bfr.bund.de/de/bewertung_mikrobieller_risiken_von_lebensmitteln-674.html

Bundesverband für Gesundheitsinformation und Verbraucherschutz – Info Gesundheit e. V.

<https://www.bgv-transplantation.de/danach.html>

Bundesverband Niere e. V.

(Federal Kidney Association)

<http://www.bundesverband-niere.de/bundesverband/organspende/organspende-schenkt-leben.html>

Bundeszentrum für Ernährung

(Federal Centre for Nutrition)

<https://www.bzfe.de>

Bundeszentrale für gesundheitliche Aufklärung

(Federal Centre for Health Education)

<https://www.organspende-info.de>

Centrum für Reisemedizin

(Centre for Travel Medicine)

<https://www.crm.de>

Deutsche Gesellschaft für Ernährung e. V.

<https://www.dge.de>

Deutsche Gesellschaft für Nephrologie e. V.

(German Nephrology Society)

<https://www.dgfn.eu>

Deutsche Gesellschaft für Tropenmedizin, Reisemedizin und Globale Gesundheit e. V.

(German Society for Tropical Medicine and International Health)

<https://www.dtg.org>

Deutsche Leberstiftung

(German Liver Foundation)

<https://www.deutsche-leberstiftung.de>

Deutsche Stiftung für Organtransplantation

(German Organ Transplant Foundation)

<https://www.dso.de>

Deutsche Transplantationsgesellschaft e. V.

(German Transplant Society)

<https://www.d-t-g-online.de>

Eurotransplant

<https://www.eurotransplant.org>

European Kidney Patients' Federation (CEAPIR)

<https://www.ekpf.eu>

International Transplant Nurses Society

<https://www.itns.org>

Junge Nierenkranke Deutschland e. V.

(Young Kidney Patients, Germany)

<https://juniev.de>

KfH Kuratorium für Dialyse und Nierentransplantation e. V. (Dialysis and Kidney Transplant Advisory Board)

<https://www.kfh.de>

Lebertransplantierte Deutschland e. V.

<https://lebertransplantation.eu>

Robert Koch Institut (RKI)

<https://www.rki.de>

Stiftung Über Leben – Initiative Organspende

<https://www.ueber-leben.de>

Ständige Impfkommission

https://www.rki.de/DE/Content/Kommissionen/STIKO/stiko_node.html

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