



YOUR KIDNEYS AND YOUR HEALTH

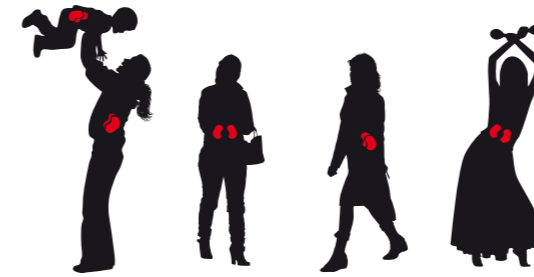
The silent partner to good health



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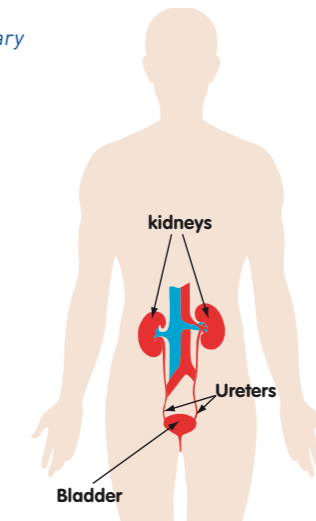
1 • What are kidneys?



1.2 - What do our kidneys look like?

Human beings have two kidneys, and both of them work in the same way. Kidneys are two bean-shaped organs, located on each side of the backbone, each of them measuring about 12cm and weighing 180g. They are part of the urinary system. Inside the kidneys, wastes and extra fluid become urine, which flows to the bladder through two tubes called ureters. The bladder stores urine until releasing it through urination.

The urinary system.



1.1 - Understanding the extraordinary job of our kidneys

Kidneys are the major organ responsible for elimination of wastes and water from the body. They work as an extraordinary factory, removing wastes and excess fluids from the body through urine. Kidneys are a kind of “washing machine” for the blood: blood arrives “dirty”, carrying wastes from the cells, into the kidneys, and goes out cleaned.

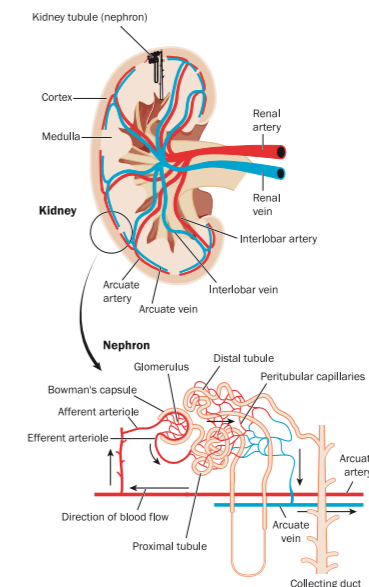
By acting as intelligent filters, kidneys are able to discriminate necessary from unnecessary elements: they eliminate wastes and excess fluids but keep nutrients needed by the body to function properly. Thus, they maintain both the fluid and the chemical balance of the body.

The working capacity of kidneys is huge: each day, they filter 180 liters of liquid from the blood, which means that your blood is filtered by your kidneys about 50 times each day!

On top of this primary role of wastes and fluids elimination, kidneys perform other biological functions: they also help to control blood pressure, to produce red blood cells and to keep our bones healthy.

Kidney function is absolutely essential; life is not possible without it. The kidneys weigh only 0.5% of total body weight but receive about 20% of the total cardiac output. We can live with only one kidney functioning but if both kidneys stop working, wastes will accumulate progressively in the blood and intoxicate the body. This can lead to various reactions such as fatigue, vomiting, sleep disturbance, anaemia, swelling or muscular disorders. People with reduced kidney function, such as in chronic kidney disease, will eventually need dialysis or transplantation to remove wastes from blood. They will also need medicine to maintain a proper production of red blood cells, correct blood pressure and healthy bones.

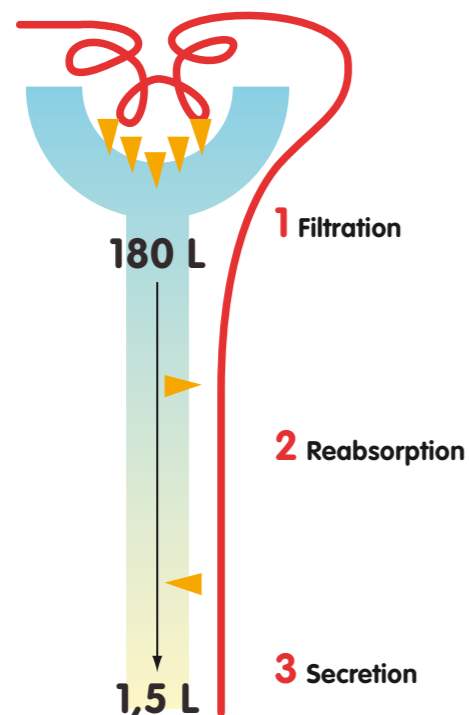
Each kidney can be compared to a huge factory, containing one million functional units called nephrons. All nephrons have a similar structure and work simultaneously. In each nephron, a glomerulus – which is a tiny blood vessel, or capillary – intertwines with a tiny urine-collecting tube called a tubule.



Structure of Kidneys.

1 • What are kidneys?

1.3- How do our kidneys work?



URINE = Water + Wastes

From blood to urine formation.

In each single nephron, fluids and wastes undergo several processes which lead to the production of urine:

- **Filtration** in the glomerulus (blood is filtered): big molecules – such as proteins and blood cells – are kept in the blood, whereas extra fluids and wastes pass through. This first filtrate is called primary urine.
- **Re-absorption** throughout the tubule: many things including elements necessary for the body are taken back naturally into blood: glucose, needed minerals, etc... and water: 99% is re-absorbed!
- **Secretion** throughout the tubule: in parallel, according to the requirements of the body, some substances can be added after filtration into urine.
- Once produced by the kidney, urine goes into the bladder, where it is stored before being excreted outside the body

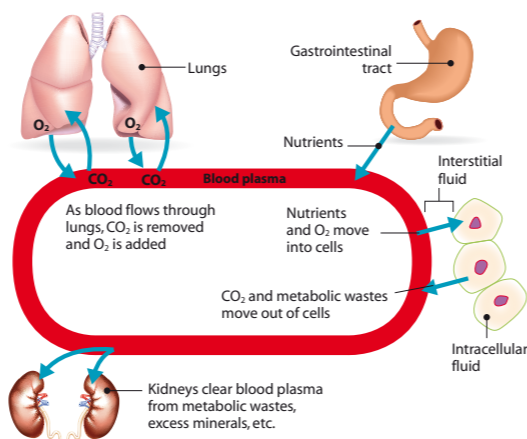
As a result of these three events, the kidneys are able to regulate the body's level of fluids and chemicals such as sodium, phosphorus, potassium... The right balance of all these things is vital to keeping us alive.

1.4- Did you know that...

... kidneys are part of the cycle of blood throughout the body?

As vital as your heart, lungs and gastro-intestinal tract, your kidneys play a key role in the flow of blood throughout your body.

The heart is the pump that enables blood to reach all our organs. As blood flows through lungs, oxygen (O₂) is added and carbon dioxide (CO₂) is removed. In the gastro-intestinal tract, blood is enriched in various nutrients extracted from the food we eat. Then, full of oxygen and nutrients, the blood reaches the other organs: nutrients and oxygen are absorbed into cells, and CO₂ and wastes are extracted out of cells. Finally, the kidneys filter the blood and discriminate necessary from unnecessary molecules, enabling clean blood to go back into circulation.



The cycle of blood.

... water is key for kidney functioning?

Water has a key role in the process of urinary wastes elimination: body water is the vehicle for wastes to be transported and then eliminated in urine, which is an aqueous solution of greater than 95% water. To allow proper wastes elimination every day, a minimum volume of urine is required for dilution, depending on the solute load to be eliminated. This minimum volume in a typical diet of a person living in a developed country is about 500 mL to ensure wastes dilution. However, this urine volume corresponds to very concentrated urine, whereas normal urine volume is more around 1,5L per day (depending on fluid intake). The European Food Safety Agency (EFSA) suggests adequate daily water intake would result in a urine volume of 1.6 liters for women and 2 litre for men, taking into account the European diet.

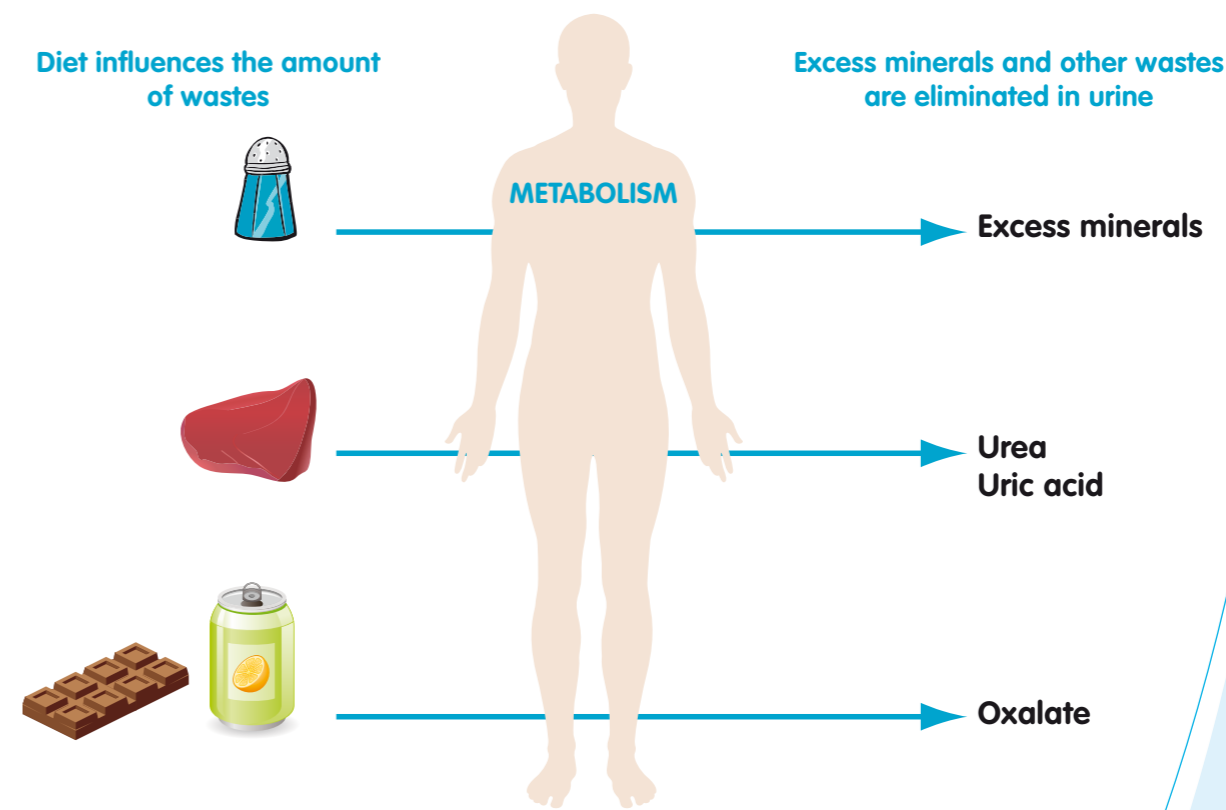
So what does this mean in practical terms? The amount of water one should drink every day depends on many factors, such as external conditions (temperature, humidity...), physical activity and height and weight and recommendations vary across countries and lifestyles, But as an example, the EFSA published recommendations for the European population, which suggest that women need 2 L of water per day and men 2.5L per day; of this, 20% is contained in the foods that we eat, and 80% should come from fluid intake.

... diet is the main source of wastes?

Wastes eliminated in urine have two origins: our diet (through food breakdown) and metabolism (by-products of cell activity). The amount of wastes is influenced mainly by the diet, either directly (for instance, sodium) or indirectly (for instance, proteins). For example, urea, the major urinary waste, comes from the metabolism of proteins. So, the richer a diet is in these things, the more wastes there are to be eliminated.

Diet influences the amount of wastes

Excess minerals and other wastes are eliminated in urine



Origin of wastes.

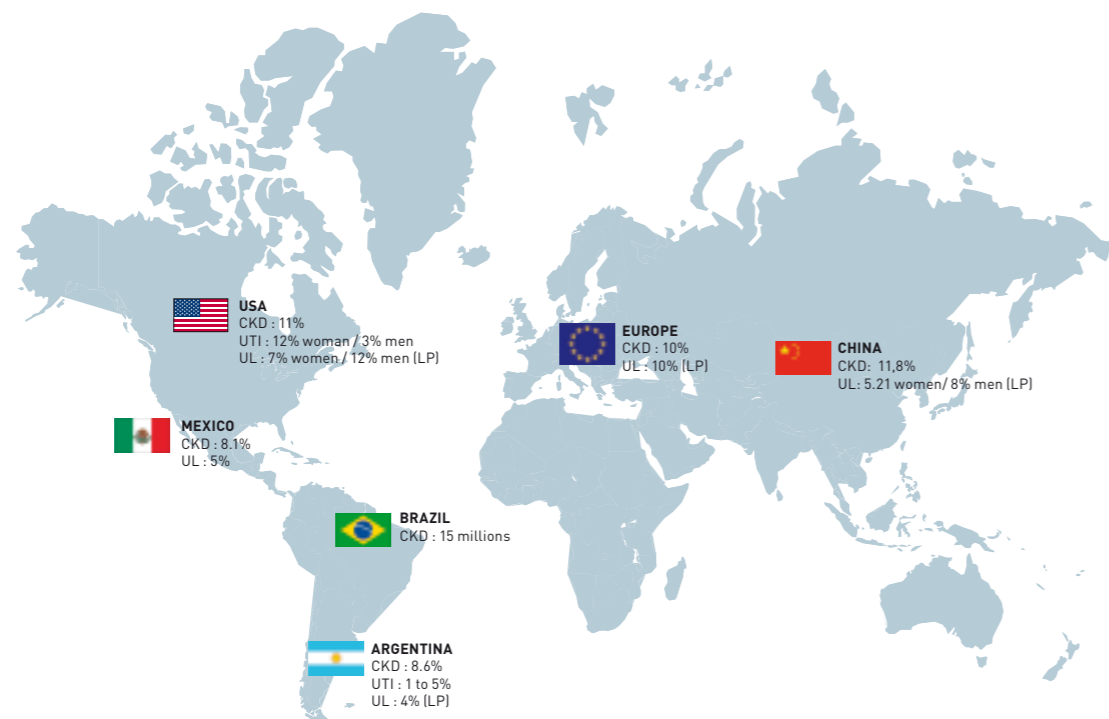
2 • Kidney health: a significant issue worldwide

The prevalence of urinary tract and renal pathologies have increased in the last decade, imposing a significant impact on quality of life of those affected and a major burden to healthcare resources worldwide.

2.1 - Prevalence of urinary tract pathologies

According to the World Health Organization, urinary tract pathologies number among the 20 most frequent causes of deaths around the world (the first being cardiovascular disease, with about 17 million of deaths every year). Urinary tract diseases cause nearly 900.000 deaths every year worldwide. This is close to the number of deaths caused by diabetes or malaria, and higher than that of nutritional deficiencies.

Prevalence of urinary tract pathologies worldwide.



- LP : Life-time prevalence
- UL : Urolithiasis
- UTI : Urinary Tract Infections
- CKD : Chronic Kidney Diseases

The map below shows some examples of prevalence rate of different pathologies linked to the urinary tract: CKD (Chronic Kidney Disease), UTI (Urinary Tract Infection), UL (Urolithiasis).

Renal pathologies incidence increases. They now concern more than 10% of the population in developed countries.

Diabetes, and its incidence increase, is the leading cause of kidney failure and accounts for 35 to 40% of new cases of end stage renal diseases in the world. The global increase of cardiovascular risk also contributes to the increase of kidney pathologies.

2.2 - Cost of disease

Current data shows that early detection and treatment of kidney disease is cost-effective, for the following reasons:

- Chronic kidney disease is not curable and in many cases will lead to the need for renal replacement therapy (dialysis or transplantation) for the rest of life, which is extremely costly and weighs heavily on healthcare budgets. Early detection provides the opportunity to avoid progression to the point of renal failure requiring long-term renal replacement therapy
- Chronic kidney disease can trigger other healthcare issues particularly cardiovascular disease, which also compounds total cost of care of the patient

The following are striking statistics which illustrate frequency and burden of renal disease around the world:

- Current figures from the United States estimate that nearly half a million patients in the US were treated for end-stage renal disease in 2004, and by the end of 2010, this figure is expected to have increased by 40%.
- The cumulative global cost for dialysis and transplantation over the next decade is predicted to exceed US\$1 trillion. This economic burden will strain healthcare budgets in developed countries. For lower income countries, it is impossible to meet such costs.
- The economic burden in lower-income countries is particularly severe, partly because chronic kidney disease generally occurs at a younger age. For example, in Guatemala, 40% of patients receiving renal replacement therapy are under the age of 40. In China, the economy will bear the burden of US\$558 billion over the next decade as a result of death and disability attributable to chronic cardiovascular and renal disease.
- The amount of people with renal replacement therapy has increased from 426000 in 1990 to 1.5 million in 2000 and is expected to rise to 2.5 million by 2010.

- In Europe, it is estimated that screening for urinary protein loss exceeding 50mg/day costs 7000 euros per life year gained, according to the PREVENT study, which is largely cost effective.
- More than 80% of individuals receiving renal replacement therapy live in the developed world because in developing countries, it is largely unaffordable. In countries such as India and Pakistan, less than 10% of all patients who need it receive any kind of renal replacement therapy. In many African countries, there is little or no access to renal replacement therapy, meaning many people simply die as a result of chronic kidney disease.

3 • Kidney & Urinary Tract Diseases: some key facts

Kidney diseases are common diseases which pose a significant public health burden yet many are preventable. These include:

- Chronic kidney diseases
- Kidney stones, or lithiasis
- Urinary tract infections

Like many conditions, several factors can affect the risk of developing the disease. Some factors are not modifiable, such as age, sex or genetic make-up; but many other factors are, such as nutrition and lifestyle.

Amazing Kidneys!



3.1 - Chronic Kidney Disease fact sheet

What is Chronic Kidney Disease?

“Chronic kidney disease” is the general term for the progressive loss of kidney function, irrespective of the pathology at the origin of this loss, or presence of kidney damage. When kidney function is decreased, kidneys do not do their job of wastes and fluids elimination correctly: wastes and excess fluids remain and accumulate in the body. This is why in the end stage of the disease, kidney failure or end-stage renal disease (ESRD), renal replacement therapy is necessary: dialysis, in which a machine takes over the blood cleaning job of the kidneys, or kidney transplant.

How is kidney function measured?

Kidney function is measured by an indicator called GFR (Glomerular Filtration Rate) which measures the blood filtration rate by kidneys. This indicator allows us to determine if the kidney function is normal, and if not, to what level the reduced kidney function has deteriorated. Several factors help to determine estimated GFR, thus called eGFR, such as blood creatinine, age, ethnicity and gender. The main indicator is blood creatinine, a waste product of the body coming from muscles. If it accumulates in the blood, it is the sign of a decreased filtration at kidney level, and so a reduced elimination of creatinine.

Definition of CKD and its 5 stages:

Table 10. Stages of Chronic Kidney Disease

| Stage | Description | GFR (mL/min/1.73 m ²) |
|-------|------------------------------------|-----------------------------------|
| 1 | Kidney damage with normal or ↑ GFR | ≥90 |
| 2 | Kidney damage with mild ↓ GFR | 60-89 |
| 3 | Moderate ↓ GFR | 30-59 |
| 4 | Severe ↓ GFR | 15-29 |
| 5 | Kidney failure | <15 (or dialysis) |

Chronic kidney disease is defined as either kidney damage or GFR <60 mL/min/1.73 m² for ≥3 months. Kidney damage is defined as pathologic abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies.

Table 11. Definition of Chronic Kidney Disease Criteria

1. Kidney damage for ≥3 months, as defined by structural or functional abnormalities of the kidney, with or without decreased GFR, manifest by either:
 - Pathological abnormalities; or
 - Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests
2. GFR <60 mL/min/1.73 m² for ≥3 months, with or without kidney damage

Methods to estimate GFR are discussed in Guideline 4. Markers of kidney damage are discussed in Guidelines 5-6.

Source: KDOQI Clinical Practice Guidelines for Chronic Kidney Disease. http://www.kidney.org/professionals/kdoqi/guidelines_ckd/p4_class_g1.htm

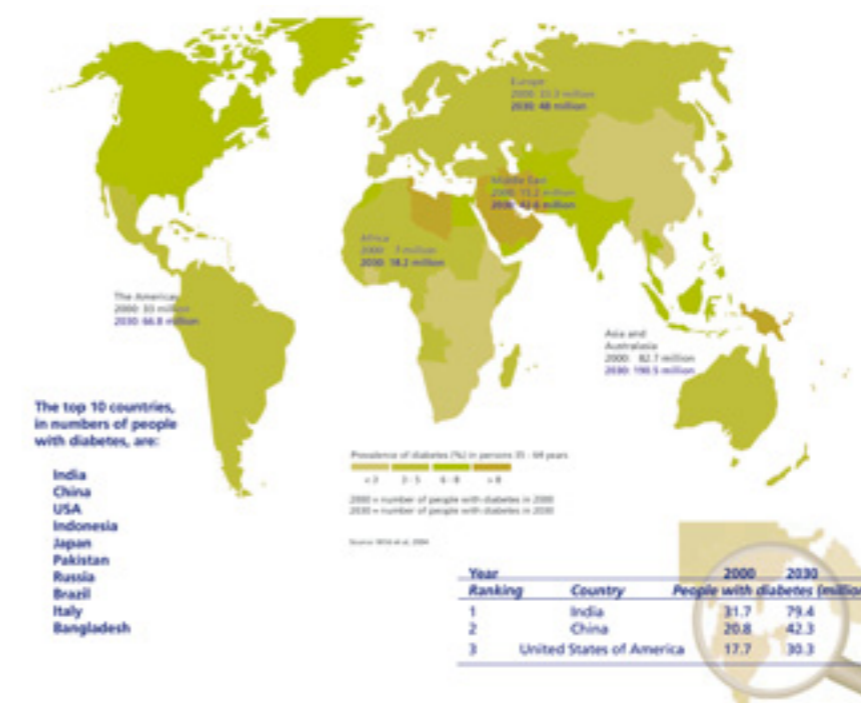
Risk Factors for Chronic Kidney Diseases

Diabetes is the main cause of chronic kidney disease, accounting for about 44% of cases of kidney failure in the USA in 2005. A second major factor is hypertension, accounting for about 27% of cases. Both are closely connected to dietary habits and lifestyle, and in many instances can be prevented. Other common causes are inflammatory diseases of the kidneys, inherited disorders, infections, etc... Recent studies also show that recurrent kidney stones can be a risk factor for CKD.

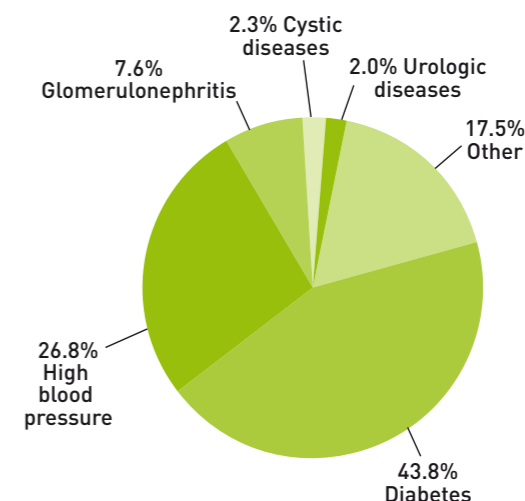
Why is Diabetes a Cause of Chronic Kidney Disease?

Chronic Kidney Disease caused by diabetes is called diabetic nephropathy. This is the high blood sugar level that causes renal damage, when diabetes is uncontrolled. It alters the tiny vessels in the kidneys, and blood filtration through these vessels becomes less efficient. For example, albumin which does not normally pass through the filter, can do so in this instance, and it is then found in the urine. For this reason, the most common test for kidney disease is a urine strip which detects albumin, therefore showing presence of kidney damage. This test would then be followed with a GFR estimation to assess kidney function.

In 2000 there were 171 million people in the world with diabetes, and projection shows that this figure may increase to 366 million by 2030!



Primary Causes of Kidney Failure (2005)



Source: United States Renal Data System. USRDS 2007 Annual Data Report. <http://www.usrds.org/>

Source: Wild S, Roglic G, Green A, Sicree R, King H. Global Prevalence of Diabetes: Estimates for the year 2000 and projections for 2030. Diabetes Care. 2004; 27: 1047-1053.

3 • Kidney & Urinary Tract Diseases: some key facts

Nutrition: an undeniable factor in chronic kidney disease

The two most common causes of chronic kidney diseases are hypertension and diabetes – two conditions closely linked to nutrition and lifestyle !

- **HTA risk factors include:** Age, ethnicity, overweight/obesity, dietary habits: salt intake, alcohol intake, lack of potassium, and lifestyle habits such as poor diet, lack of physical activity or smoking
- **Type 2 Diabetes risk factors include:** Age, ethnicity, family history, gestational diabetes, overweight/obesity, and lifestyle habits such as poor diet and lack of physical activity

Symptoms of Chronic Kidney Diseases

In the early stages Chronic Kidney Disease is silent: a person suffering from deteriorating kidney function will probably not feel unwell.

But when kidney disease progresses some signs may appear:

- Fatigue
- Lack of concentration
- Lack of appetite or nausea
- Sleep disorders
- Muscle cramps
- Swollen feet and ankles
- Darkened skin
- Increased or decreased need to urinate
- Feeling itchy or numb

3.2 - Kidney Stones Fact Sheet

What are Kidney Stones?

Kidney stones, or **lithiasis**, are quite common, affecting about 10% of the population in developed countries, and 50% of those who have already experienced kidney stones will have another episode. There are different kinds of kidney stones according to their dominant chemical composition, but calcium stones represent about 80% of kidney stones diagnosed with calcium-oxalate stones being the most common.

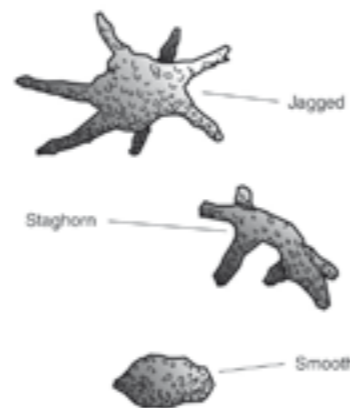
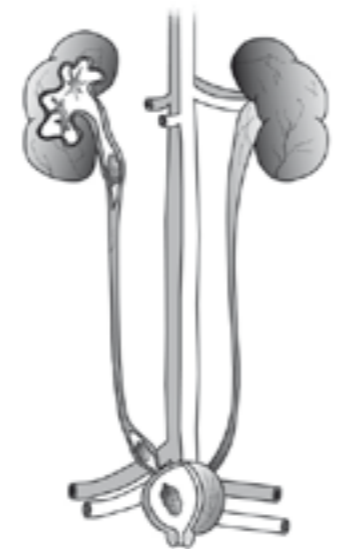
For each kind of kidney stones there is specific dietary advice usually combined with pharmacological treatment to help prevent recurrence. One common guideline for any non-infectious kidney stone is the recommendation to increase fluid intake in order to improve urine dilution.

Indeed, the formation of a kidney stone is the result of an imbalance of urine composition, and can be influenced by concentrated urine. Daily food intake determines the amount of wastes which need to be eliminated, and total water intake determines the range of urine concentration. For example, if you have a rich diet (e.g high fat, high protein) but low fluid intake, you may have concentrated urine. When urine is concentrated, wastes have more chance to meet and solidify into crystals. Those crystals can then aggregate to form stones.

Risk Factors for Kidney Stones

In addition to specific disease conditions and metabolic abnormalities, main risk factors for Kidney Stones:

- Family history of kidney stones
- Low urine volume
- Obesity
- Living in hot climate or working in hot environment
- Diet high in animal protein (meat)
- Excessive salt intake
- ...



Kidney stones in the urinary tract.

Symptoms of Kidney Stones

Kidney Stones often do not produce symptoms until there is a blockage in the urinary tract. This is generally a very painful event.

At this point, the main symptoms include:

- Pain, located in the back, side, lower abdomen or groin.
- Blood in the urine
- Urination disorders (difficulty urinating or frequent urination)
- Nausea or vomiting
- Loss of appetite
- Swollen abdomen

Dietary advice for people with a history of kidney stones

- Increase fluid intake
- Increase fibre intake
- Avoid excessive intake of oxalate rich food (for example, rhubarb, spinach, tea leaves, chocolate, nuts, etc...)
- Avoid excessive intake of vitamin C (as it is metabolised into oxalate in the body)
- Avoid excessive calcium intake, but stay within the general dietary recommendation of 800-1000 mg per day
- Limit animal protein (meat) intake
- Limit sodium intake

Are you at risk of kidney stones?

- I have a family history of kidney stones
- I have already had kidney stones
- I eat a lot of salt
- I have low fluid intake
- I am a man
- I have a high-protein diet
- I am overweight or obese
- I suffer regularly from urinary tract infections
- I have digestive disease (such as chronic bowel inflammation) or had surgery (intestinal bypass operation)
- I live in a hot country or work in a hot environment

If you have selected several items, you may be more at risk of kidney stones. Talk with your doctor for means of prevention.

Concentrated urine

Crystals formation

Aggregation

Stone

Steps to kidney stone's formation.

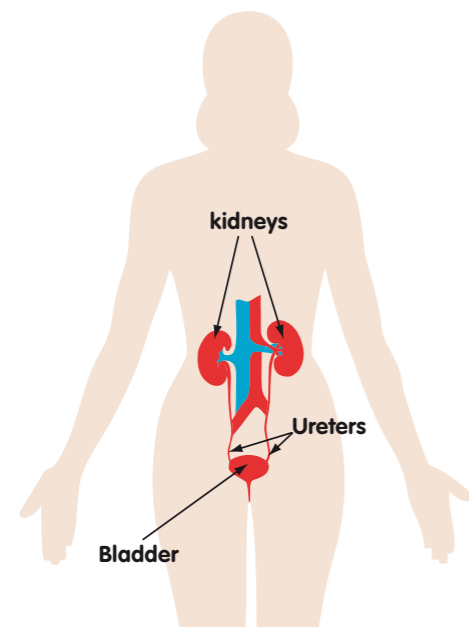
3 • Kidney & Urinary Tract Diseases: some key facts

3.3 - Urinary Tract Infections Fact Sheet

What it is a Urinary Tract Infection?

A Urinary Tract Infection (UTI) is quite a common pathology. Women are more at risk of developing this infection mostly due to their anatomy: it affects about one out of five woman in during their lifetime.

A Urinary Tract Infection (UTI) is most often caused by bacteria called Escherichia coli which normally lives in the intestine but has colonised into the urinary tract. In normal conditions, urine is sterile, which means that there are no germs. UTI occurs commonly in the lower part of the urinary tract, in the bladder or urethra. But if left untreated, it can progress to the upper part; when the kidneys become infected, it is called "pyelonephritis" and can permanently damage kidneys.



Structure of the Female Urinary Tract

Some women who have previously developed a UTI will suffer from it again. Current scientific data suggest that increasing water intake could help in recurrence prevention as more frequent urination helps to flush out any bacteria which have colonised into the urethra.

Risk Factors of Urinary Tract Infections

Risk factors which increase the risk of developing a UTI include:

- Previous urinary tract infections
- Age
- Gender - women more than men
- Sexual activity
- Diabetes
- Urinary abnormality
- Diaphragm contraception
- Recurrent kidney stones

Symptoms of a Urinary Tract Infection

Main symptoms of Urinary Tract Infection include:

- A strong, persistent urge to urinate
- A burning sensation when urinating
- Passing frequent, small amounts of urine
- Blood in the urine (hematuria) or cloudy, strong-smelling urine

4 • Nutrition and Kidneys: Focus on Fluids

Good nutrition is fundamental to kidney health. This is because our kidneys remove the wastes produced by the digestion of food. Thus, our kidneys are clearly exposed to what we eat!

Fluid intake, although often overlooked, is an important part of nutrition. Water is the nutrient consumed in the largest quantities.

Excess fluid and wastes derived from our diet are both eliminated in the form of urine. In a normal diet, the amount of wastes produced remains stable, and the amount of excess fluid will determine the urine concentration.

For this reason, primary advices given to people with a history of kidney stones is to increase fluid intake to obtain urine volume above 2L. This helps to keep wastes more diluted in the urine and thus to prevent crystallisation of some substances, which is the early stage of development of kidney stones. Some studies show that it could be of interest to increase fluid intake also in healthy people to prevent a first episode, and not only to prevent recurrence. Indeed it has been shown in American studies (Curhan, 1996, 1998, 2004), that people with the lowest fluid intake had higher risk to develop kidney stones than people with higher fluid intakes. As part of healthy dietary habits, water is the ideal choice.

In the same way, increased water intake is also advised to prevent recurrent urinary tract infections, because frequent urination helps to flush bacteria from the urinary tract, which in turn reduces the time for bacteria to adhere the wall of the urinary tract and lead to infection.

How much water do we need?

European Food Safety Agency (EFSA) recommends that women need 2L of fluid per day and men 2.5L, 20% being brought by foods and 80% by fluid intake.

[EFSA, Scientific Opinion on Dietary Reference Values for water, 2010]



5 • Tips to keep your kidneys healthy: World Kidney Day's Golden Rules



More information on:
<http://www.worldkidneyday.org>

1- Keeping fit and active

Keeping fit helps to reduce your blood pressure and therefore reduces the risk of Chronic Kidney Disease. The concept «on the move for kidney health» is a worldwide collective march involving the public, celebrities and professionals moving across a public area by walking, running and cycling. Why not join them - by whatever means you prefer! Check out the events section of the WKD website for more information.

2- Keep regular control of your blood sugar level

About half of people who have diabetes develop kidney damage, so it is important for people with diabetes to have regular tests to check their kidney functions. Kidney damage from diabetes can be reduced or prevented if detected early. It is important to keep control of blood sugar levels with the help of doctors or pharmacists, who are always happy to help.

3- Monitor your blood pressure

Although many people may be aware that high blood pressure can lead to a stroke or heart attack, few know that it is also the most common cause of kidney damage. The normal blood pressure level is 120/80. Between this level and 129/89, you are considered prehypertensive and should adopt lifestyle and dietary changes. At 140/90 and above, you should discuss the risks with your doctor and monitor your blood pressure level regularly. High blood pressure is especially likely to cause kidney damage when associated with other factors like diabetes, high cholesterol and Cardio-Vascular Diseases.

4- Eat healthy and keep your weight in check

This can help prevent diabetes, heart disease and other conditions associated with Chronic Kidney Disease. Reduce your salt intake. The recommended sodium intake is 5-6 grams of salt per day (around a teaspoon). In order to reduce your salt intake, try and limit the amount of processed and restaurant food and do not add salt to food. It will be easier to control your intake if you prepare the food yourself with fresh ingredients. For more information on nutrition and kidney friendly cooking, visit our nutrition page.

5- Maintain a healthy fluid intake

Although clinical studies have not reached an agreement on the ideal quantity of water and other fluids we should consume daily to maintain good health, traditional wisdom has long suggested drinking 1.5 to 2 litres (3 to 4 pints) of water per day. Consuming plenty of fluid helps the kidneys clear sodium, urea and toxins from the body which, in turn, results in a "significantly lower risk" of developing chronic kidney disease, according to researchers in Australia and Canada. The findings, the researchers said, do not advocate "aggressive fluid loading", which can cause side effects, but they do provide evidence that moderately increased water intake, around two liters daily, may reduce the risk of decline in kidney function. It's important to keep in mind that the right level of fluid intake for any individual depends on many factors including gender, exercise, climate, health conditions, pregnancy and breast feeding. In addition, people who have already had a kidney stone are advised to drink 2 to 3 litres of water daily to lessen the risk of forming a new stone.

6- Do not smoke

Smoking slows the flow of blood to the kidneys. When less blood reaches the kidneys, it impairs their ability to function properly. Smoking also increases the risk of kidney cancer by about 50 percent.

7- Do not take over-the-counter pills on a regular basis

Common drugs such as non-steroidal anti-inflammatory drugs like ibuprofen are known to cause kidney damage and disease if taken regularly. Such medications probably do not pose significant danger if your kidneys are relatively healthy and you use them for emergencies only, but if you are dealing with chronic pain, such as arthritis or back pain, work with your doctor to find a way to control your pain without putting your kidneys at risk.

8- Check your kidney function if you have one or more of the 'high risk' factors

- you have diabetes
- you have hypertension
- you are obese
- you or one of your family members suffers from kidney disease
- you are of African, Asian, Aboriginals origin



6 • Raising Awareness of Kidney Health

World Kidney Day is a joint initiative of the International Society of Nephrology (ISN) and the International Federation of Kidney Foundations (IFKF). The mission of World Kidney Day is to raise awareness of the importance of our kidneys to our overall health and to reduce the frequency and impact of kidney disease and its associated health problems worldwide.

Our objectives are the following:

- Raise awareness about our "amazing kidneys"
- Highlight that diabetes and high blood pressure are key risk factors for Chronic Kidney Disease (CKD)
- Encourage systematic screening of all patients with diabetes and hypertension for CKD
- Encourage preventive behaviors
- Educate all medical professionals about their key role in detecting and reducing the risk of CKD, particularly in high risk populations.
- Stress the important role of local and national health authorities in controlling the CKD epidemic. Health authorities worldwide will have to deal with high and escalating costs if no action is taken to treat the growing number of people with CKD. On World Kidney Day all governments are encouraged to take action and invest in further kidney screening. If detected early, Chronic Kidney Diseases can be treated--thereby reducing other complications and dramatically reduce the growing burden of deaths and disability from chronic renal and cardiovascular disease worldwide.

In 2011, World Kidney Day will call attention to the large, and often unappreciated, role the kidney plays in cardiovascular health. Cardiovascular disease is the most common cause of death worldwide and one of the four WHO target areas in its on-going campaign to reduce the burden of chronic, non-communicable diseases (NCDs).

The World Kidney Day website (www.worldkidneyday.org) facilitates global action for kidney health by providing central coordination of events, free toolkits including logos, posters, leaflets, videos, media kits and other material, an opportunity to share information and ideas among World Kidney Day organizers and supporters, and a coordinated media campaign to publicize the message of World Kidney Day.

For more information and ideas for action please visit www.worldkidneyday.org



7 • Interesting links

WKD: World Kidney Day

<http://www.worldkidneyday.org/>

ISN: International Society of Nephrology

<http://www.isn-online.org/isn/index.html>

EFSA: European Food Safety Agency

Scientific Opinion on Dietary Reference Values for water:
<http://www.efsa.europa.eu/en/scdocs/scdoc/1459.htm>

WHO

<http://www.who.int/en/>

Some suggestions of scientific articles

Borghesi, L., Meschi, T., Amato, F., Novarini, A., Romanelli, A. and Cigala, F. Hot occupation and nephrolithiasis. *J Urol* 1993;150:1757-60.

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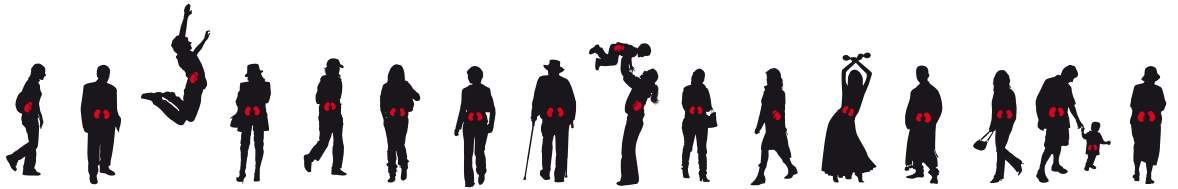
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SUMMARY :

The essential role our kidneys play in maintaining good health is frequently overlooked and few people have any understanding of how our kidneys function. Modern lifestyle trends such as inactivity and unhealthy diets associated with the growing obesity epidemic, have a significant impact on kidney health.

It is essential that we raise the profile of kidney health amongst the general public. This Kidney Health Communications Tool Kit is a first step towards establishing a better understanding of what our kidneys are designed for and why we should take care of them.