Be an active part of your anticoagulation therapy with INR self-monitoring

“I know my value”
INR* self-monitoring needs only a drop of blood, is easy, fast and decreases the possibility of complications, such as clots or bleeding.

*International Normalized Ratio (see page 10 for additional information)
Be involved in your anticoagulation therapy
Find out more

Anticoagulant treatment
Have you just found out from your doctor that you need to start taking an oral anticoagulant? Or are you already taking an oral anticoagulant but would like to have more information?

Anticoagulants are drugs which make your blood “thinner”
- Some may refer to this as “thinning the blood” but they actually increase the time it takes your blood to clot\(^1\). For example after an injury it will take longer for the bleeding to stop than for someone that does not take an anticoagulant
- They are taken by millions of people worldwide every day\(^2\)

Anticoagulants are commonly prescribed for the following conditions\(^9\):
- Atrial fibrillation
- Mechanical heart valves
- Venous thromboembolism

This booklet will give you background information about these conditions and how they are usually managed.

Currently available anticoagulants include:

| Warfarin |
|-----------------|-----------------|-----------------|-----------------|
| Given as a tablet |
| The most widely used anticoagulant in the world\(^3\) |
| Needs monitoring\(^4\) |

| Aspirin |
|-----------------|-----------------|-----------------|-----------------|
| Given as a tablet |
| Not as effective as Warfarin\(^5\) |

| Heparin |
|-----------------|-----------------|-----------------|-----------------|
| Has to be given as an injection or in a drip\(^6\) |
| Usually not used long-term |

| Other oral anticoagulants |
|-----------------|-----------------|-----------------|-----------------|
| Given as a tablet |
| Regular monitoring not required\(^7\) |
| Not suitable for all patients\(^8\) |
Atrial fibrillation
You are not alone

Atrial fibrillation (AF) is common
- More than 2.5 million people in the US and 6 million in the EU are affected by this condition\(^1\)
- AF is especially common in older people, affecting nearly 10% of people over 80 years of age\(^1\)

What is AF?
- AF occurs when the electrical impulses which control the heartbeat become disorganised\(^1\)
- This causes the upper chambers of your heart (the atria) to contract rapidly and irregularly\(^1\)
- As a result, your heart will not pump blood around the body as effectively as it should do\(^1\)
- AF can occur in short episodes or can be permanent\(^2\)
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What are the symptoms of AF?\(^3\)
- An irregular heartbeat
- Dizziness
- Tiredness
- Breathlessness
- Chest pain

What are the treatment options for AF?\(^3\)
- Medications to normalize the heart rhythm
- Cardioversion (electric pulse to try to restore a normal rhythm)
- Catheter ablation (radiowaves applied to the diseased tissue of the heart)
- Pacemaker device fitted to control the heart rhythm

If you have AF, then you have an increased risk of stroke
- If you have been diagnosed with AF, you are up to five times more likely to have a stroke than people who do not have AF\(^4\)
- Furthermore, people with AF tend to have more severe strokes than people without AF\(^5\)

What causes a stroke in AF?
- If you have AF, blood tends to travel more slowly through your heart\(^6\)
- This slow-moving blood can pool in the heart and start to form clots\(^7\)
- Clots can then leave the heart and can travel to the brain\(^8\)
- If a clot prevents fresh blood from reaching a certain area of the brain, brain cells will eventually start to die, causing a stroke\(^8\)

How can the risk be reduced?
- Taking an oral anticoagulant will significantly reduce your risk of stroke\(^9\)
- Warfarin is the most widely used oral anticoagulant for the prevention of stroke\(^9\)
- With your doctor you can decide what is the best treatment option for you

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\(^1\) Source: Healthcare \& Medicine

\(^2\) Source: Healthcare \& Medicine

\(^3\) Source: Healthcare \& Medicine

\(^4\) Source: Healthcare \& Medicine

\(^5\) Source: Healthcare \& Medicine

\(^6\) Source: Healthcare \& Medicine

\(^7\) Source: Healthcare \& Medicine

\(^8\) Source: Healthcare \& Medicine

\(^9\) Source: Healthcare \& Medicine

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Fig 1 (above): Electrocardiogram tracing of a normal heart rhythm.
(below): In atrial fibrillation, the tracing shows tiny, irregular «fibrillation» waves between heartbeats. The rhythm is irregular and erratic.

Fig 2: Warfarin reduces the risk of stroke in AF (Adapted from Hart et al, 2007)
Heart valve replacement
A common treatment for heart valve disease

What is heart valve disease and how can it be treated?
· Heart valves ensure that blood flows in only one direction through your heart21
· However, some people are born with faulty heart valves or have damaged valves as a result of disease or ageing21
· If heart valve disease cannot be treated by medication or surgical repair, then the only option is to replace it with an artificial (mechanical) or a tissue valve22

Heart valve replacement is a common treatment, but it can cause clot formation
· More than a million mechanical heart valves have been implanted in the past 50 years23
· However, they can trigger blood clot formation, potentially causing a heart attack or stroke23
· If you have a mechanical heart valve then you will need to take anticoagulants for the rest of your life23
· Warfarin is currently the anticoagulant of choice for patients with mechanical heart valves24

Venous thromboembolism
Deep vein thrombosis and pulmonary embolism

Who is at risk of venous thromboembolism?
· If you have just had major surgery or a total hip or knee replacement, your doctor has probably prescribed you anticoagulants to prevent the formation of harmful blood clots26
· Other risk factors for venous thromboembolism include pregnancy, obesity, older age, a sedentary lifestyle and inherited conditions which make blood more likely to clot26

What is a venous thromboembolism?
· The medical term venous thromboembolism includes the conditions deep vein thrombosis and pulmonary embolism27
· A deep vein thrombosis is a blood clot which forms in a deep vein, often in the legs28
· Pulmonary embolism is a complication of deep vein thrombosis which arises when a blood clot breaks away and travels to the lungs28

What are the consequences of a pulmonary embolism?
· In mild cases, it causes chest pain and breathlessness28, in severe cases however, it can cause sudden death29
· Without treatment, 5-15% of deep vein thrombosis sufferers may die from a pulmonary embolism30

The main treatment for venous thromboembolism is anticoagulant therapy
· Usually an oral anticoagulant such as warfarin is given for at least 3 months27
· If you are affected by recurrent deep vein thrombosis, an oral anticoagulant may be given for longer, sometimes for life27
Ensuring effective warfarin therapy

Knowing your INR value

Effective warfarin treatment requires monitoring

- Taking the correct dose is crucial for efficient anticoagulation treatment.
- The correct dose is established by measuring how long it takes your blood to clot. This is called the International Normalized Ratio (INR)\(^9\)
  - An INR of 1 is normal and is found in people who are not taking warfarin\(^11\)
  - An INR of 2 means that your blood takes twice as long to clot as normal\(^12\)
  - An INR of 3 means that your blood takes three times as long to clot as normal\(^12\)
- Your doctor will provide you with a target INR range, depending on your indication. Within this therapeutic range you are at the lowest risk of stroke or embolism\(^9\)
- As your response to treatment may be affected by several factors, such as the food you eat and medications you take\(^9\), it is important to monitor regularly to check your INR value

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Taking the correct dose is crucial to prevent complications\(^4\)

- If you are not taking enough warfarin (i.e. your INR value is too low), you are at risk of:
  - Developing harmful blood clots (which can, depending on the condition you have been diagnosed with, cause stroke, heart attack or venous thromboembolism)
- If you are taking too much warfarin (i.e. your INR value is too high), you are at risk of:
  - Bleeding or bruising
  - Excessive blood loss in response to injury
  - Brain hemorrhage

Monitoring is the safest way to know that your anticoagulation therapy is working effectively

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Fig 5: Not enough warfarin (e.g. too low INR) is associated with a risk for blood clots, while too much warfarin (e.g. too high INR) can lead to bleeding complications.

The optimal INR depends on your condition; for atrial fibrillation it is between 2 and 3\(^{10}\).
Self-monitoring can help you achieve independence, whilst having the reassurance of knowing your INR value, anywhere, anytime

INR monitoring
Your time is important

Patient self-monitoring at home
- Capillary sample drawn with fingerstick
- INR value on CoaguChek® XS system
- Possible dose change by HCP

Patient self-managing at home
- Capillary sample drawn with fingerstick
- INR value on CoaguChek® XS system
- Possible dose change by patient

INR test in surgery
- Clinic appointment needed
- Patient record reviewed
- Capillary sample drawn with fingerstick
- INR value on CoaguChek® XS Pro system
- Possible dose adjusted and documented by HCP

INR test in the hospital
- HCP takes venous blood sample
- Courier transports blood sample to lab
- INR result lab performs test
- Lab communicates result to HCP
- Results reviewed by HCP
- HCP communicates INR result to patient
- Possible dose adjusted and documented by HCP
Patient self-monitoring
Increase your safety and independence

Be involved with your anticoagulation management
- Have the peace of mind that you know your INR value when needed, home or away
- Self-monitoring only requires a drop of blood and results are available within a minute
- Results can either be reported to your doctor or nurse who will adjust your warfarin dose for you, or you can learn how to adjust the dose yourself

Self-monitoring can increase your safety on warfarin
- Self-monitoring with CoaguChek gives an accurate result
- With self-testing you can monitor your INR more frequently
- This can increase the amount of time your INR is within therapeutic range
- Without increased risk for serious bleeding

Self-monitoring gives you the freedom and independence to monitor your anticoagulation therapy
- Regular INR testing at the doctor’s office or hospital can be inconvenient for some people due to:
  - Work or family commitments
  - Transport difficulties
  - Other illnesses
  - Holiday plans

Self-monitoring reduces your risk of blood clots

Percentage of warfarin patients who had a major blood clot

Fig 6: Self-monitoring reduces the risk of major blood clots (Adapted from Bloomfield et al, 2011)
Worldwide more than a quarter of a million people now use patient self-monitoring to monitor their warfarin therapy

“With self-monitoring, I feel completely in control of my anticoagulation therapy”

“With self-monitoring, I stay within my therapeutic range”

“With self-monitoring, I no longer need to take the time to attend regular clinic appointments”

With self-monitoring you can test your INR whenever and wherever you like
- No more time consuming trips to the hospital or to your local surgery
- Don’t worry about holidays – you can take your INR meter with you
- You no longer need to take time off work to attend hospital or GP appointments
Thanks to CoaguChek® you have the reassurance and peace of mind of always knowing your INR value when needed.

Patient self-monitoring enables more regular checks and dosage adjustment if necessary, therefore improving the time spent within your therapeutic range.38

You can manage your anticoagulation therapy wherever you are, whatever you do. There’s no need to change your routine to fit in clinic appointments.

If you want to make sure you are in complete control of your anticoagulation therapy, start patient self-monitoring to make this a reality.

1  http://www.stoptheclot.org/learn_more/blood_clot_treatment.htm last accessed June 2012
2  http://www.ismaap.org/ last accessed June 2012
6  http://www.nhs.uk/Conditions/Anticoagulant-medicines/Pages/How-does-it-work.aspx last accessed June 2012
14  http://www.nhs.uk/Conditions/Atrial-fibrillation/Pages/Treatment.aspx last accessed June 2012
32  Atrial Fibrillation Association Australia Warfarin Therapy Fact Sheet
Are you interested in monitoring your INR at home?
Ask your doctor about more information on patient self-monitoring or visit www.coaguchek.com

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Roche Diagnostics International Ltd.
CH-6343 Rotkreuz
Switzerland
www.coaguchek.com