TEST

Capillary nail refill test

A capillary nail refill test times how quickly colour returns after pressure is released from a nail.

WHAT IT MEASURES
Time for nail-bed colour to return after pressure

SAMPLE
None

FASTING NEEDED?
No

HOW LONG IT TAKES
Less than one minute

RESULTS IN
Immediate; no laboratory processing

USED FOR
Initial assessment and monitoring of peripheral circulation

MAIN LIMITATION
Cold, technique, lighting, and observer timing can mislead

Overview

The capillary nail refill test is a quick check of blood flow through the smallest blood vessels, called capillaries. It is usually performed on a fingernail or toenail.

Pressure is placed on the nail until the tissue underneath becomes pale. After the pressure is released, the time taken for the usual colour to return is counted in seconds. This is the capillary refill time .

The test helps assess peripheral circulation, meaning blood flow to areas away from the centre of the body. It is used alongside heart rate, blood pressure, breathing, skin temperature, alertness and other findings.

Capillary refill is not a diagnosis. A normal result cannot rule out every serious circulation problem, and a slow result does not identify the cause.

Why the test is ordered

A healthcare professional may use capillary refill when checking whether enough blood is reaching the skin and limbs. It may be part of an urgent assessment of someone who is unwell, dehydrated or injured.

The test may also be used to:

The test is fast and can be repeated, but treatment decisions should not be based on it alone.

- Recheck circulation after fluids or other treatment
- Assess an injured hand, foot, finger or toe
- Check circulation around a cast, splint or tight dressing
- Support the assessment of a baby or child with an acute illness
- Monitor possible poor circulation

Who should have the test

There is no routine screening programme for capillary refill, and healthy people do not usually need to test it at home.

You may have the test during a general examination, an emergency assessment or a circulation check after an injury. It is commonly included when assessing unwell children but can be performed at any age.

The test may be less useful on a damaged, infected or covered nail. Another finger, toe or skin area may be checked instead. Results from different body sites are not always directly comparable.

How to prepare

No fasting or special preparation is needed. You can usually eat, drink and take your regular medicines as normal.

For a planned assessment, keep your hands warm and rest briefly beforehand. Tell the healthcare professional if you recently exercised, smoked, vaped, used caffeine or were outside in cold weather, as these can temporarily affect circulation.

Dark or opaque nail polish and artificial nails can hide colour changes. Removing them may help before a planned examination, but it should never delay an urgent assessment.

What happens during the test

You will usually rest your hand or foot in a comfortable position. The examiner presses firmly on the nail until the tissue underneath becomes pale, normally holding the pressure for several seconds.

After releasing the pressure, the examiner watches the nail bed and counts how long the colour takes to return. A clock, stopwatch or video may be used, although timing is often done by counting.

The examiner may repeat the test, compare several fingers or toes, feel the limb's temperature, check pulses and look at skin colour. The whole test usually takes less than a minute.

Understanding your results

The result is recorded in seconds. Faster colour return generally suggests prompt refilling of the small blood vessels. A longer time may suggest reduced peripheral blood flow, but cold skin, technique and other non-emergency factors can also delay it.

A two-second threshold is often discussed, but it is not universal. Cut-offs may differ for children or older adults. Interpretation also varies with age, sex, pregnancy, body site, medicines, temperature and the wider clinical situation. There is no laboratory reference interval because no sample is analysed.

A longer time can occur with dehydration, low blood pressure, reduced blood flow to a limb or narrowing of peripheral blood vessels. It does not show which cause, if any, is present. The result is most useful when considered with symptoms, vital signs and other examination findings.

What affects the results

Capillary refill is sensitive to testing conditions. Important influences include:

These factors mean the observed time may not represent circulation throughout the body.

- Cold surroundings or skin: Cold narrows blood vessels and can delay colour return.
- Pressure and timing: The force and duration of pressure can change the result.
- Body site and position: Fingers, toes and other sites may refill at different speeds. Limb position may also affect circulation.

- Lighting and nail coverings: Poor or coloured lighting, nail polish, artificial nails and nail damage can hide colour changes.
- Observer timing: Counting by eye is less consistent than using a stopwatch or video.
- Age: Refill may be slower in older adults, while technique and expected times may differ in newborns and children.
- Exercise, nicotine and caffeine: These can temporarily change peripheral blood flow.
- Pain, anxiety or fever: Each may alter circulation or skin temperature.
- Medicines and pregnancy: Medicines that affect blood vessels and circulatory changes during pregnancy may influence interpretation.
- Circulation conditions: Raynaud's phenomenon or peripheral artery disease can slow refill.

Accuracy and limitations

Capillary refill can provide a rapid warning sign, but it is not accurate enough to use alone.

A normal result can occur despite serious illness or reduced circulation elsewhere. A delayed result can occur when overall circulation is adequate, especially if the person is cold or the technique varies.

Results also differ between examiners and testing methods. There is no single reliable rate for how often the test misses poor circulation or gives a misleading delayed result because accuracy varies with age, clinical setting, body site, cut-off and measurement method.

Other checks may include blood pressure, pulse assessment, oxygen measurements, blood tests such as lactate, or Doppler ultrasound of blood flow in a limb. Each provides different information.

Risks and complications

The test does not break the skin and has no significant medical risks. Pressure may feel briefly uncomfortable, particularly if the nail or nearby tissue is injured.

What happens next

A normal result may be recorded with the rest of your examination. If the result seems slow, the test may be repeated after warming or repositioning the hand. The healthcare professional

may also check pulses, blood pressure, skin temperature and other signs.

A slow result without urgent symptoms may lead to routine follow-up, especially if you often have cold or discoloured fingers or toes.

Seek urgent medical assessment if a hand, foot, finger or toe becomes newly pale, blue, cold, numb, weak or severely painful, particularly after an injury or after a cast or tight dressing has been applied.

Call emergency services for severe breathing difficulty, fainting, new confusion, marked weakness, or cold and clammy skin with serious illness. Do not use a home capillary refill result to delay emergency care.

Common questions

Can I drink coffee before the test?

Yes. Fasting is not needed. Caffeine may temporarily narrow small blood vessels, so mention recent coffee or energy drinks if the test is planned. Do not delay an urgent assessment.

Does the time of day matter?

There is no required testing time. Room temperature, activity and how warm your hands are usually matter more.

Can I exercise beforehand?

There is no formal restriction, but exercise can change skin blood flow and temperature. Rest briefly before a planned measurement and mention recent strenuous activity.

Does nail polish affect the result?

Opaque or dark polish and artificial nails can make colour changes difficult to see. Another nail or skin site may be used.

Can I do the test at home?

You can observe colour return, but home timing is easy to misread. A normal-looking result does not rule out serious illness or a limb circulation problem.

Why was the test done on my toe instead of my finger?

The site may be chosen to assess a specific limb, such as after a foot injury. Finger and toe results should not be assumed to mean exactly the same thing.

Sources

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