TEST

Bile culture

A bile culture checks a bile sample for bacteria or fungi that may cause infection.

WHAT IT MEASURES
Bacteria or fungi able to grow from a bile sample

SAMPLE
Bile

FASTING NEEDED?
Sometimes, when sedation, ERCP, or surgery is planned

HOW LONG IT TAKES
Minutes when added to a planned procedure

RESULTS IN
Usually 2-5 days; timing varies by laboratory

USED FOR
Diagnosing biliary infection and guiding antibiotic choice

MAIN LIMITATION
Antibiotics or contaminated collection can mislead the result

Overview

Bile is a digestive fluid made by the liver. It travels through the bile ducts and may be stored in the gallbladder before entering the small intestine.

A bile culture tests a bile sample for bacteria and, when requested, fungi. If an organism grows, further testing may show which antibiotics like amoxicillin or doxycycline are likely to work.

Bile is collected during another procedure, such as endoscopic retrograde cholangiopancreatography (ERCP), surgery, or drainage through the skin. This is not a screening test. It is usually performed when biliary infection is suspected or drainage is already needed.

Why the test is ordered

A bile culture can help investigate infection of the bile ducts or gallbladder. Infection may develop when a stone, narrowing, tumour, or blocked stent prevents normal drainage.

The test may:

A culture cannot identify the cause of a blockage. Ultrasound, CT, MRI, or ERCP may be needed to find stones, narrowing, or other structural problems.

- identify bacteria or fungi
- guide antibiotic or antifungal treatment
- investigate infection that is severe, recurring, or not improving
- help interpret organisms found in blood cultures

Who should have the test

A bile culture may be considered if you have a suspected biliary infection and are having drainage. It may be especially useful when infection is severe, has returned, developed after health care, or has not improved with initial antibiotics.

It may also be ordered when a biliary stent is replaced or during gallbladder or bile duct surgery. Routine culture during every procedure is not always useful. The decision depends on your symptoms, previous procedures, antibiotic exposure, and whether the result is likely to change treatment.

How to prepare

Preparation depends on how the bile will be collected.

For ERCP, surgery, sedation, or anaesthesia, follow the procedure team's instructions about when to stop eating and drinking. Fasting requirements vary.

Tell the team about:

Do not stop prescribed medicines unless your procedure team tells you to.

Fasting may not be necessary when sampling an existing biliary drain. Do not disconnect the drain or collect a sample yourself unless specifically instructed.

- all prescription and non-prescription medicines
- blood thinners and diabetes medicines
- recent or current antibiotics
- allergies, especially reactions to contrast dye or medicines
- pregnancy or possible pregnancy

- previous stomach, intestinal, liver, or bile duct surgery

What happens during the test

During ERCP, you receive sedation or anaesthesia. A flexible endoscope passes through your mouth and stomach into the first part of the small intestine. A thin tube is guided into the bile duct so bile can be collected in a sterile container. A blockage may be treated at the same time.

During surgery, bile may be collected directly from the gallbladder or ducts. A trained professional can also use sterile equipment to sample a drain placed through the skin.

The laboratory places the sample on materials that support microbial growth. Preliminary findings may be available before final identification and antibiotic susceptibility results. Anaerobic bacteria require suitable transport, and fungal testing may need to be requested separately.

Understanding your results

A positive result names one or more organisms that grew. Susceptibility results may classify an organism as susceptible, resistant, or susceptible with increased antibiotic exposure.

Growth does not always prove active infection. Stents and drains can become colonised, meaning organisms live there without causing illness. Organisms may also enter from the intestine, skin, or collection equipment.

"Mixed growth" means several organisms were found. It may indicate an infection involving multiple organisms, contamination, or colonisation.

"No growth" means no organism grew under the conditions used. It does not rule out infection, particularly after antibiotics or when the organism is difficult to grow.

There is no universal numeric reference range. Interpretation depends especially on symptoms, collection method, recent antibiotics, and whether a drain or stent is present.

What affects the results

Factors that can affect a bile culture include:

Eating, exercise, and time of day do not directly change culture growth, but they may affect procedure safety and scheduling.

- Antibiotics: Treatment before collection may prevent organisms from growing.
- Collection route: Samples taken through the intestine or an old drain may contain unrelated organisms.
- Stents and drains: Biofilms on these devices may produce a positive culture without active infection.
- Transport: Delay, oxygen exposure, or incorrect temperature can kill some organisms.
- Sample quality: Small samples or bile diluted with contrast dye or saline may reduce detection.
- Test requested: Routine culture may not detect fungi, viruses, parasites, or organisms requiring unusual conditions.
- Recent procedures: ERCP, surgery, or drain manipulation may introduce organisms.

Accuracy and limitations

There is no single accuracy figure for bile culture. Performance depends on antibiotic use, collection site, stents, transport, and how infection is defined.

The test may miss infection when few organisms are present, antibiotics have reduced their number, or routine methods cannot grow the responsible organism. It may also be positive because of contamination or colonisation, especially with long-term drains or stents.

Blood cultures can detect infection in the bloodstream. Imaging is better for finding a blockage, stone, abscess, or duct damage. Molecular tests may identify organisms more quickly but can detect DNA from dead organisms and may provide less information about effective antibiotics.

Results must be interpreted alongside symptoms, examination, blood tests, imaging, and response to treatment.

Risks and complications

The culture itself adds little risk because bile is generally collected during an already-needed procedure.

ERCP can cause inflammation of the pancreas, bleeding, infection, a tear in the digestive tract, or a reaction to sedation. Drain placement can cause pain, bleeding, infection, bile leakage, or injury to nearby structures. Your procedure team will explain the risks of your planned approach.

Sampling an existing drain is usually brief, but sterile technique is needed to avoid infection or dislodging the tube.

What happens next

Preliminary findings may prompt an early treatment review. After final identification and susceptibility testing, your team may continue, change, or narrow treatment, or decide that growth represents colonisation.

Follow-up may include checking symptoms, blood tests, drain function, and whether a stone, narrowing, or stent needs treatment. If symptoms continue despite a negative culture, additional cultures, imaging, or another diagnosis may be considered.

Seek urgent medical care for fever or chills with yellow skin or eyes, worsening upper abdominal pain, repeated vomiting, or new symptoms after ERCP, surgery, or drain placement.

Call emergency services for confusion, fainting, severe breathing difficulty, heavy bleeding, or rapidly worsening severe pain.

Common questions

Can I drink coffee before a bile culture?

Not if you were told to fast for ERCP, surgery, sedation, or anaesthesia. Coffee with or without milk may break fasting instructions. Fasting may not be required for sampling an existing drain.

Does the time of day matter?

Usually not. Timing depends on the procedure and, when possible, collecting bile before antibiotics.

Can I exercise beforehand?

Exercise does not directly affect the culture. Follow procedure-related activity restrictions, especially if you are unwell or have a drain.

Will antibiotics affect my result?

Yes. They can prevent organisms from growing. Do not delay or stop prescribed treatment yourself; promptly treating a possible infection may be more important than collecting a culture first.

What does "no growth" mean?

No organism grew under the laboratory conditions used. This does not prove there is no

infection, especially after antibiotics.

How is this different from a blood culture?

A bile culture samples the biliary system. A blood culture looks for organisms in the bloodstream. The tests may find different organisms and are often interpreted together.

Sources

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