

## Information for Preanalytics

### Ordering tests:

- Please use our special order form to order your laboratory tests. This is available on the internet under [www.labor-stoecker.de](http://www.labor-stoecker.de). All required tests can be marked in the order form. Do not forget to give the details of the sender (stamp and signature, for hospitals also ward information) and the complete address of the patient.
- To avoid misunderstandings please use the analysis codes from our specifications list.
- In order to provide qualitative high-value diagnostics we also request relevant information concerning anamnesis, symptoms, pregnancy (weeks completed plus days), vaccinations, journeys abroad, preliminary results, treatments, drugs being taken and other relevant clinical data. Special instructions for particular analyses can be taken from the specifications list.
- If the amount of sample is limited please indicate the priority of the tests.
- If the report should be send to a colleague during your holiday, we require the full address of the colleague for security reasons .
- Please write clearly or print in sufficient quality.
- For very urgent tests please notify us by telephone and mark the order form with "CITO".
- Additional investigations can be ordered within 4 weeks with reference to the original order. For patients with social health insurance (Germany) please send a new referral slip.

### Sample withdrawal (general):

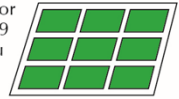
- Sample withdrawal should only be undertaken by qualified medical personnel (exception: Dried Blood Spots, see below).
- The identity of the patient should be checked and the analysis order should be filled out completely before withdrawal of the sample.
- It is not permissible to treat patients without the appropriate consent. Consent for sample withdrawal can be assumed if the patient willingly submits to the usual sample withdrawal. A written consent may be necessary for legal reasons. For human genetic investigations a written declaration of consent is required according to the law on genetic diagnostics. A form for this purpose is available under [www.labor-stoecker.de](http://www.labor-stoecker.de). If obtaining consent is not possible in emergency situations, this may be waived provided the ordered analyses are in the patient's best interest.
- Please take note of any special conditions for withdrawal described below or additionally given in the specifications list.
- Close tubes immediately to avoid evaporation.
- Please follow the guidelines for labelling of samples (see below).
- During sample withdrawal please document the date/time and the member of staff who performs the withdrawal.

### Blood, serum and plasma:

#### General information

- Blood samples should optimally be taken in the morning on an empty stomach (generally 12 hours fast) at a standard time (e.g. 7-9 o'clock). Blood thinning substances (e.g. aspirin) should not be taken beforehand. Medications required in the morning should be taken after blood withdrawal.
- Closed blood withdrawal systems (e.g. monovette, vacuette) reduce the preanalytical influence on the results and the infection risk for medical personnel and are therefore preferable to syringes.
- When taking whole blood or serum and plasma at the same time, the order of withdrawal should be taken into account. To avoid contamination, collect tubes without additive before tubes with additive. When withdrawing several tubes, the thinning tube should never be at the beginning (release of tissue factors on puncture).
- Venous stasis should be around 20-30 mm Hg under the systolic blood pressure so that arterial pulsation is maintained. During longer blood withdrawals (several tubes) the stasis should be relieved. Venous stasis should not last longer than one minute.
- Blood should not be taken from horizontal veins or arterial entry sites. If this cannot be avoided the entry site must be rinsed with 0.9% NaCl solution before withdrawal and a sufficient amount of blood (for adults 10-20 ml) thrown away. Directly before blood withdrawal no medications should be injected through the catheter.
- Blood withdrawal should not be performed with too fine cannulae, for adults not narrower than no. 12. Haemolysis can occur if cannulae are too fine.
- The blood should flow freely into the collection vessel. If the pressure is too low haemolysis can occur.
- Do not expose samples to direct sunlight.

#### Whole blood (coagulated)



- Withdraw blood using a monovette without anticoagulant additive and leave in the collection vessel (do not transfer).
- Do not freeze whole blood, since strong haemolysis occurs on defrosting and the samples cannot be used.

EDTA blood (for human genetic diagnostics)

- Withdraw blood using an EDTA monovette, immediately mix blood well by swinging round.
- EDTA blood can be stored cooled (2-8°C) for up to 24 h, for longer storage the sample should be frozen (-18°C to -24°C).

Serum and plasma

- To obtain serum, withdraw blood using a monovette without anticoagulant additive, leave to clot for 20-60 minutes and centrifuge for 10 min at around 3000 U/min. Take the supernatant (serum) and transfer to a separate tube without additive. Label the tube with the type of sample material (serum).
- To obtain plasma, withdraw blood using a monovette with anticoagulant additive. Immediately mix the tube headover several times, but do not shake, and then centrifuge for 15 min at 3000 U/min. Take the supernatant (serum) and transfer to a separate tube without additive. Label the tube with the type of sample material (EDTA, heparin or citrate).
- Note that the minimum volumes given in the specifications list correspond to the serum or plasma required. This corresponds to around half the volume of whole blood, so at least double the amount of whole blood must be withdrawn.
- When using a gel monovette the serum or plasma can remain in the withdrawal vessel after centrifugation, since the gel provides sufficient separation of the supernatant from the cellular components.
- The relative centrifugal acceleration g is not the same as the rotations per minute U/min. To convert, the radius of the centrifuge must be known:

$$U/min = \sqrt{\frac{g}{1,118 \cdot r}} \cdot 1000$$

- Use a centrifuge with a swing-out motor for centrifugation, as otherwise the serum or plasma separation may not be complete.

**Cerebrospinal fluid:**

- The cerebrospinal fluid (CSF) tests we offer belong to special diagnostics. Orders for special diagnostic tests should be based on results of cytological and clinical chemical basic diagnostic tests. This preanalytical information only applies to the determination of pathogen-specific antibodies. For preanalytics for basic diagnostic tests please follow the instructions of the laboratory performing them.
- In contrast to blood samples, the withdrawal of CSF cannot be repeated without further severe strain on the patient. Careful selection of tests is therefore necessary. However, in cases of fulminant or acute illness all tests under consideration should be ordered immediately, in order to obtain the results as quickly as possible. Please bear in mind the contraindications.
- To determine intrathecal synthesis and to assess disorders in blood-brain barrier function, withdrawal of a CSF/serum pair is required. The blood to obtain serum should be taken at the same time as the CSF puncture. The time between blood collection and CSF puncture should be less than 1 hour. Please send serum and CSF samples in the same package to ensure that they are correctly assigned. To interpret the results we require additionally the values for total albumin and total IgG, or IgM for CSF and serum.
- CSF is usually withdrawn into polypropylene tubes without additive by means of lumbal puncture (rarely ventricular puncture) under sterile conditions. The first drops should be discarded. For protein analysis the cells are centrifuged off. The supernatant can be stored cooled (2-8°C) for up to 4 weeks. For longer storage the samples can be frozen.

**Human swabs:**

- For swabs (especially throat swabs for SARS-CoV-2 analysis) the relevant official instructions are to be followed. Swab tubes containing lysis buffer (we recommend the eNAT system from Copan) for virus deactivation should be used.

**Dried Blood Spots (DBS):**

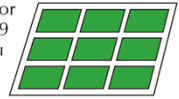
- For sampling of dried capillary blood from the fingertip for the detection of antibodies against SARS-CoV-2 only the blood collection set from EUROIMMUN is to be used (Order No. ZV\_9701-0101). Strictly follow the instructions for use provided with the blood collection set.

**Procedure in the event of deviations:**

Any deviation from the above-mentioned recommendations should be noted in writing on the order form so it can be taken into consideration during the processing and result interpretation. Please also note a justification as to why the analysis of the sample is still useful. The laboratory reserves the right to reject the order if deviations from the preanalytical requirements no longer allow a proper examination.

**Labelling samples:**

Sample tubes must be labelled clearly, otherwise we cannot process your order. Please label the tubes (not the envelope) with the surname, first name and date of birth of the patient, your internal laboratory sample number and if necessary withdrawal date



and time, as well as the type of sample material (e.g. serum, EDTA plasma, CSF). This should be done before or immediately after the withdrawal to avoid mixups. DBS cards are to be labelled according to the manufacturer's instructions for use. If samples are split or multiple samples are sent from the same patient, each sample part must be uniquely identified. The sender is responsible for correct classification of patient and sample!

Known infectious samples (e.g. from hepatitis or HIV patients) must additionally be labelled "infectious"!

**Sending samples:**

The samples and the corresponding order must be sent together to the laboratory, so that the order can be properly processed and completed quickly. Pack the sample tubes securely in transport tubes and boxes for medical material according to regulation UN 3373. Swabs and DBS cards are to be packed according to the manufacturer's instructions for use. The samples can be sent by courier or by post to the address indicated at our website ([www.labor-stoecker.de](http://www.labor-stoecker.de)). For longer transport times and in case of extreme temperatures (exceeding 30°C) we recommend sending the samples cooled. Prior to transportation, the samples should be stored appropriately (cooled, safe and separated from other goods).

CSF samples for the analyses of beta-amyloid (1-40), beta-amyloid (1-42), total-tau pTau and neurofilament (pNf-H and pNf-L) by ELISA must be sent frozen.

**Waste disposal:**

Materials used for sample withdrawal should be disposed of according to the manufacturer's instructions and the relevant official and legal regulations.