Maintaining a safe and adequate blood supply during the pandemic outbreak of coronavirus disease (COVID-19) and recommendations on collection of COVID-19 convalescent plasma in community and hospital settings

WHO Interim Guidance (May 2020)
Development of the Interim Guidance

• WHO Interim Guidance first published on 20 March 2020
  o Adapted from WHO Guidance for National Blood Services on Protecting the Blood Supply During Infectious Disease Outbreaks
    and risk assessments on COVID-19 from regional networks and institutions
  o Inputs received from subject experts of many international organizations

• Updated Interim Guidance in May 2020 under consideration
  o Response to regional requests to increase flexibility and to add details
  o Addition of recommendations on collection of convalescent plasma
  o Inputs received from subject experts of many international organizations
Content of the Interim Guidance

• General Considerations
• Mitigating the potential risk of transfusion-transmitted SARS-CoV-2
• Mitigating the risk of staff and donor exposure
• Mitigating the impact of reduced donor availability
• Managing the demand for blood products
• Ensuring supplies of critical materials and equipment
• Communication
• Collection of convalescent plasma
General Considerations (I)

Transfusion transmission of SARS-CoV-2 has not been reported, but theoretically is possible warranting reasonable precautions.

Reduced blood donation and collection can severely impact blood supplies.

Appropriate actions to mitigate harms require data-driven risk assessments of the local epidemic (country/region) in the context of the public health system.

A national approach should be adopted for coherence and coordination and to ensure public confidence in blood safety and supply.

Blood services should be included in the national outbreak response.
General Considerations (II)

Actions taken should be appropriate for the situation, proportionate to risk, and take into consideration:

• Extent of COVID-19 spread
• Level of community circulation
• Local epidemiology
• Risk of transfusion transmission in context of overall burden of disease
• Quality of health care system
• Public health response
• Blood supply sufficiency
• Operational impacts
• Cost effectiveness of interventions relative to overall country situation
Mitigating the potential risk of transfusion-transmitted SARS-CoV-2 (I)

- Educate donors on risk factors for self-deferral and actively defer donors for risk factors (recent travel to an outbreak area, close contact with and/or care of an infected person, signs and symptoms of a compatible illness, recent diagnosis of SARS-CoV-2 infection)
  - Deferral of at least 14 days after exposure from travel or close contact
  - Standard deferral of at least 28 days after full recovery from COVID-19

- Current pre-donation criteria excluding symptomatic individuals who are unwell or with signs and symptoms of fever and respiratory illness must be strictly complied with
  - Further evaluation of donors reporting illness, and referral for testing/isolation in line with national policies if criteria for COVID-19 are met
Mitigating the potential risk of transfusion-transmitted SARS-CoV-2 (II)

• Ask donors to report post-donation illness consistent with COVID-19
  o Retrieve blood components collected within 14 days after risk exposure and within 14 days prior to symptom onset
  o Quarantine and delay release of components based on absence of illness in the donor subsequent to donation

• During widespread community transmission, donor restrictions may need to be evaluated and reduced to fit local situations if availability of blood for critical transfusion therapy is affected

• A haemovigilance system should be in place to capture possible cases of COVID-19 transmission from blood transfusions
Mitigating the potential risk of transfusion-transmitted SARS-CoV-2 (III)

• Testing donors or donations for SARS-CoV-19 RNA is not presently indicated in the absence of documented transfusion transmission.

• Although likely effective to inactivate SARS-CoV-2 in plasma and platelets, introduction of pathogen reduction technology (PRT) is not recommended where it is not already in place.
  - The need for PRT to prevent transmission of SARS-CoV-2 is questionable in the absence of known or likely transfusion transmission.
  - Introduction of PRT adds significant logistical and financial burdens at a difficult time.

• No presumed risk of transmission from plasma derivatives.
  - Enveloped viruses like SARS-CoV-2 are susceptible to manufacturing process.
Mitigating the risk of staff and donor exposure to SARS-CoV-2 (I)

• Strategies should be proportionate and evidence-based and follow public health measures taken in the country

• Blood donation centers and manufacturing facilities are not patient care settings:
  o Public health measures appropriate to community environments with frequent public contact should be followed (e.g., screening for COVID-19 related symptoms, masks and gloves for staff, social distancing, hand hygiene and regular environmental decontamination)
  o If COVID-19 is confirmed in a blood donor or staff, the management of contacts should follow national public health guidelines

• Providing information to donors and public about measures taken contributes to gaining confidence to continue donating blood
Mitigating the risk of staff and donor exposure to SARS-CoV-2 (II)

• Efforts should be made to prevent crowding of donors and staff
  o Schedule blood donations by appointment to control numbers on site
  o Add space between donation chairs and lessen staff contacts with donors
  o Avoid overlapping staff shifts and reduce staff movements across the facility

• Ensure safety of the donation process and exclude individuals who should not donate at earliest opportunity
  o Provide information on deferral criteria
  o Pre-screening procedures to identify potentially infected donors before entry
  o Provide donors with masks and hand sanitization on entry

• Staff education on infection prevention and control, limited use of PPE, measures to mitigate impact of staff illness, provide guidance on laboratory biosafety practices
Mitigating the impact of reduced availability of blood donors (I)

• Prepare in advance how best to respond to a shortfall in donations
  ○ Establish with authorities that blood collection is an essential service

• Ensure a clear and consistent communication strategy
  ○ Launch donation campaigns/public service messages – most effective as part of national emergency response messaging
  ○ Use different communication platforms; make use of social media

• Monitor donation numbers closely to enable a rapid response to evolving shortages, especially of platelets (due to short shelf-life)

• Cooperate closely with hospitals to monitor inventories and demand
  ○ Redistribute products to balance supply/demand and prevent wastage
Mitigating the impact of reduced availability of blood donors (II)

• Address barriers to blood collection:
  o Shift collection sites rapidly as feasible to address opportunities for donation; provide donors with transportation
  o Intensify appointment scheduling, adjust operating hours
  o Organise blood collection on a more targeted basis; retain and recall healthy repeat donors

• Maintain routine practices for donor management and TTID testing
  o In extreme shortages, reduction of whole blood donation intervals can be considered for selected donors with robust pre-donation hemoglobin levels
  o A Recommended deferral period of 28 days can be reduced to 14 days to address blood shortages to re-enter donors after full recovery from COVID-19

• Consider importing blood components from less affected areas of the country, or other countries as permitted by regulatory authorities
Managing the demand for blood and blood products

- Demand for transfusions may decrease during a widespread epidemic
  - The health care system shifts toward treating COVID-19 patients
  - Elective surgeries and non-urgent clinical interventions are deferred
- Transfusions remain necessary for emergency situations (i.e., trauma, post-partum hemorrhage, severe infant anemia, blood dyscrasias, urgent surgeries requiring blood availability)
- Increased blood stocks may be needed to support COVID-19 patients with sepsis or requiring extracorporeal membrane oxygenation
- Good patient blood management and coordination with transfusing physicians can optimize blood use to minimize demand
Ensure undisrupted supplies of critical materials and equipment

• Many factors may compromise the supply of critical materials and equipment used in blood collection, component preparation and laboratory testing (including shortage of immunohematology reagents and infectious disease screening assays)
  o Border closures, transport/trade restrictions, quarantines
  o Disrupted production

• The blood service must take steps to ensure continuity of supplies
  o Early identification of risks to the supply chain from the pandemic
  o Identification of alternative sources
  o Cooperation among blood establishments to share critical supplies as able
Communication

• Maintaining blood supply depends on public confidence in the system
• Government authorities/blood service must keep all stakeholders well-informed about strategies for managing the blood system
  o Assuring that it is safe to donate blood without undue risk of exposure to SARS-CoV-2
  o Recognition that blood collection activities are essential services
• A clear, proactive and consistent communication strategy is key to addressing and overcoming anxiety and fears
  o Messaging is consistent with overall national emergency response messaging
  o Effective public awareness campaigns on the importance of maintaining an adequate national blood supply, need for blood donors, and safety of the donation process should be disseminated continuously
  o Staff members within the blood service need to understand the risks of contagion and the preventive measures needed to protect both donors and staff
Collection of COVID-19 convalescent plasma (I)

- WHO recognizes COVID-19 convalescent plasma (CCP) as an experimental therapy appropriate for evaluation in clinical studies and as a starting material for the manufacture of experimental hyperimmune globulins.
- Clinical studies of CCP may include randomized controlled trials (RCTs) and structured observational studies similar to active arms of an RCT.
  - Where clinical studies are not possible, patient outcomes should be documented and blood samples from donors and recipients archived for future characterization.
- CCP should be prepared only in blood services that can assure product quality in compliance with recognized international standards.
- Preparation and clinical use of CCP should meet ethical criteria for human experimentation in regard to both donors and product recipients.
Collection of COVID-19 convalescent plasma (II)

• Common criteria for acceptance of donors of CCP include:
  o Qualification based on standard criteria for blood or plasma donation
  o Diagnostic evidence of prior infection with SARS-CoV-2
  o Complete resolution of symptoms and cessation of treatments for COVID-19 for at least 14 days prior to the donation
  o Establishment of the minimum neutralizing antibody titer for acceptance of plasma
  o Measurement of the neutralizing antibody titer in the unit of CCP; Where donor selection based on the neutralizing antibody titer is infeasible a blood sample should be saved for subsequent characterization

• For general advice see: WHO Blood Regulators Network Position Paper on Use of Convalescent Plasma, Serum or Immune Globulin Concentrates as an Element in Response to an Emerging Virus (2017)
  https://www.who.int/bloodproducts/brn/2017_BRN_PositionPaper_ConvalescentPlasma.pdf?
Collection of COVID-19 convalescent plasma (III)

• CCP should be collected by plasmapheresis to avoid unnecessary red cell loss and to optimize the plasma volume that can be obtained
  o Red blood cells obtained as a by-product of CCP preparation from whole blood can be released for transfusion if the donor was asymptomatic for at least 28 days or a nasal swab is tested and found negative for viral RNA
  o Infection control precautions based on WHO Guidance on rational use of PPE

• Outcome reporting should include:
  o Patient characteristics (e.g. sex, age, co-morbidities),
  o Timing of therapy in relation to disease onset,
  o Therapies administered including number, volume and antibody titer of transfused units of CCP
  o Clinical and laboratory indicators of disease severity at baseline and at defined subsequent time points
  o Adverse reactions linked to transfusions
  o Time to hospital discharge or fatality
Further information on maintaining blood supplies during the SARS-CoV-2 pandemic and on policy statements and protocols for studies of COVID-19 convalescent plasma can be found at an open access website of the International Society of Blood Transfusion http://isbtweb.org/coronaoutbreak/convalescent-plasma-covid-19-resources/.

WHO does not endorse any of the statements or protocols listed at this website; reference to this information is provided exclusively to assist stakeholders with identifying links to the various statements, guidelines and protocols.