



Gulf Coast Regional
Blood Center

**Providing
Convalescent
Plasma for
Treatment of
COVID-19**

A New Transfusion Challenge

What is convalescent plasma and why do we care?

- “Convalescent plasma” is plasma collected from a person who has recovered from a disease
 - in this case COVID-19
- This plasma contains antibodies
 - that would presumably help the patient fight the infection
- Long history of passive antibody therapy
 - *Immediately* available for providing immunity to susceptible persons
 - May be used in treatment or prevention



Convalescent plasma has a long history

- *Studies in general not of good quality*
- Spanish flu 1918
 - Overall improvement in mortality
 - Earlier treatment better than later
 - Various products- pooled serum, individual blood transfusions
- Bolivian hemorrhagic fever 1966
- Argentinian hemorrhagic fever 1986
- Lassa fever 1984
- Ebola 1999- not effective
- West Nile (mice) 2003



CCP in other respiratory viruses

- SARS (Cheng 2005)
 - Higher day 22 discharge when CCP given before day 14 (58%v 16%)
 - Antibody titers and volumes not correlated with response
- Influenza
 - A(H1N1), 2009 hyperimmune IVIg, CCP
 - Reduction in mortality
 - A(H5N1) few studies
- MERS
 - Reduced mortality, depends on antibody levels
 - Mono- and polyclonal antibodies in development



CCP in COVID-19

- Shen (JAMA Mar 27, 2020), Shenzhen, China
 - 5 severely ill patients, 1 ECMO
 - Received CCP on hospital day 20 (4) or 10 (1)
 - 400 mL, transfused immediately
 - Also continued antivirals
 - Improved clinical status 1 week after transfusion
 - Donors 10 days asymptomatic
- Duan (PNAS Mar 18, 2020), Wuhan, China
 - 10 severely ill patients
 - Transfused 200 mL of CCP, median day 16.5 of illness
 - Also continued antivirals
 - Clinically improved within 3 days-100%
 - Historical controls had higher mortality (30%)
 - Improved outcomes with earlier transfusion
 - Plasma collected 3 weeks post onset, methylene blue treated



FDA and BARDA [govt] interest in CCP for COVID-19

- Joint project of FDA, AABB, Mayo, ABC
- Regulatory and funding issues

- BARDA funding for some units
 - Biomedical Advance Research and Development Authority
 - Under HHS



Dealing with this *Investigational Product*

- Collection
- Goes to hospitals
 - Emergency IND (Investigational New Drug) process
 - Expanded Access Protocol
 - Other research
- Payment- another topic



How the system works (will work)

- Donor is recruited and collected by blood center(s)
 - Units will be held by blood center, used locally or entered into national database
- Hospital enrolls in IRB-approved protocol for investigational use
 - Expanded Access, with Mayo IRB and protocol
 - eIND (Investigational New Drug, electronically) single patient, FDA
- Hospital seeks CCP from blood center or national network site
- Network coordinated by ARC; will arrange shipment
- BARDA will pay collector for units shipped under Expanded Access
- Blood Center will bill for eIND units



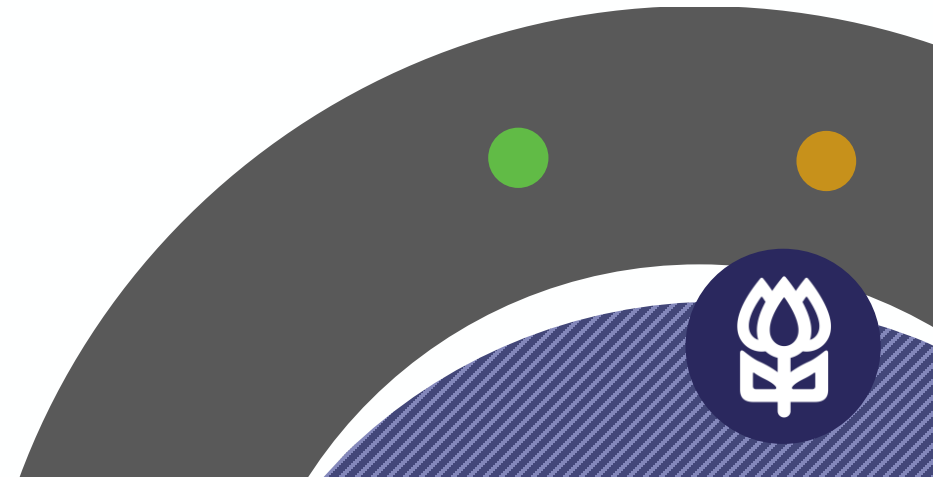
Collection

- Donor qualification
 - Diagnostic test (NP swab, etc) at time of illness *or*
 - Antibody test later
 - Complete resolution of symptoms
 - For 14 days with negative NP swab OR
 - For 28 days – no additional test required
 - Meet standard donor criteria
 - Including TRALI criteria
 - May donate every 28 days
 - May be shortened with Medical Director discretion



Apheresis donor collection

- Collect apheresis plasma in units of 200 mL
- Apheresis plasma collection can yield 2-4 products
- 2 systems available, GCBRC



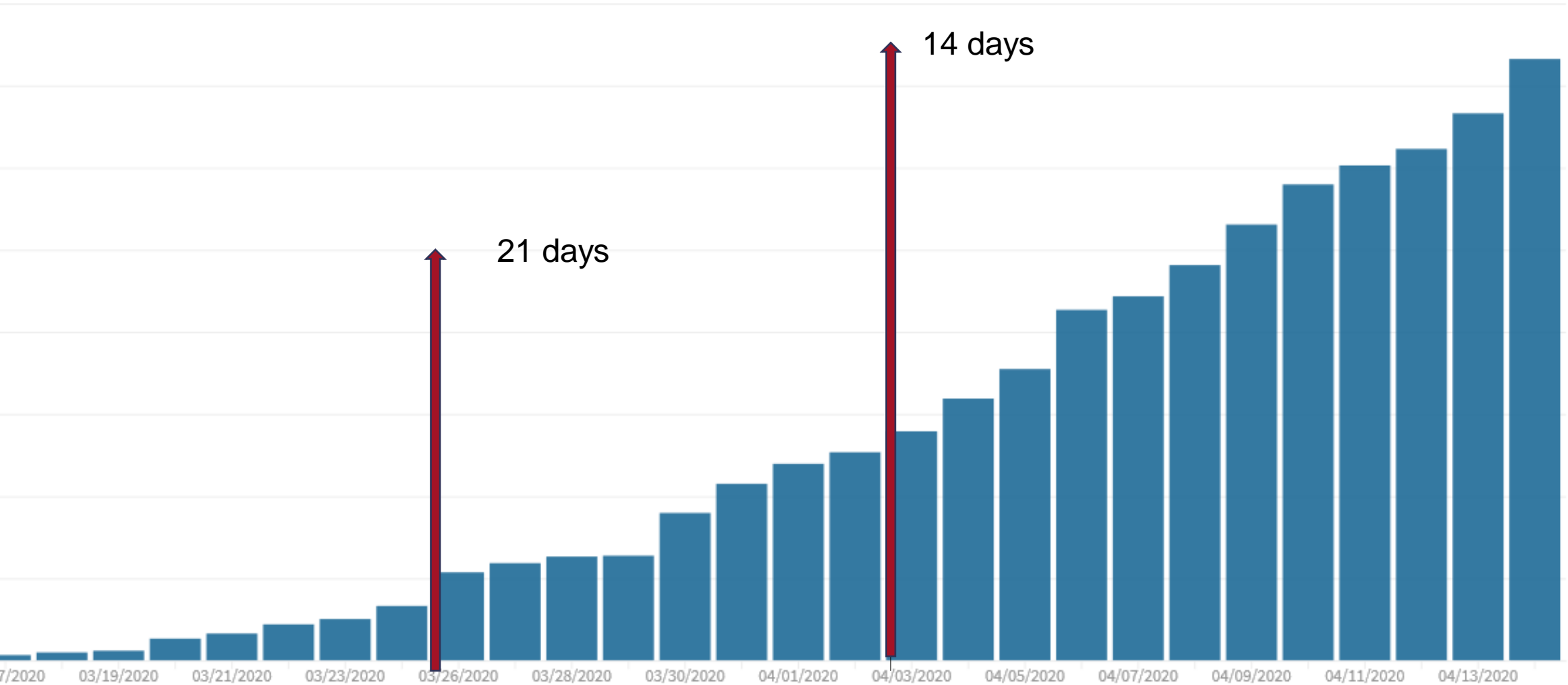
Donor recruitment

- From known positives
- From public
- Family, friends of patients
- In Houston, limited by time of testing
- Antibody testing will help, possibly



Number of people tested for the novel coronavirus by day in Texas

People tested



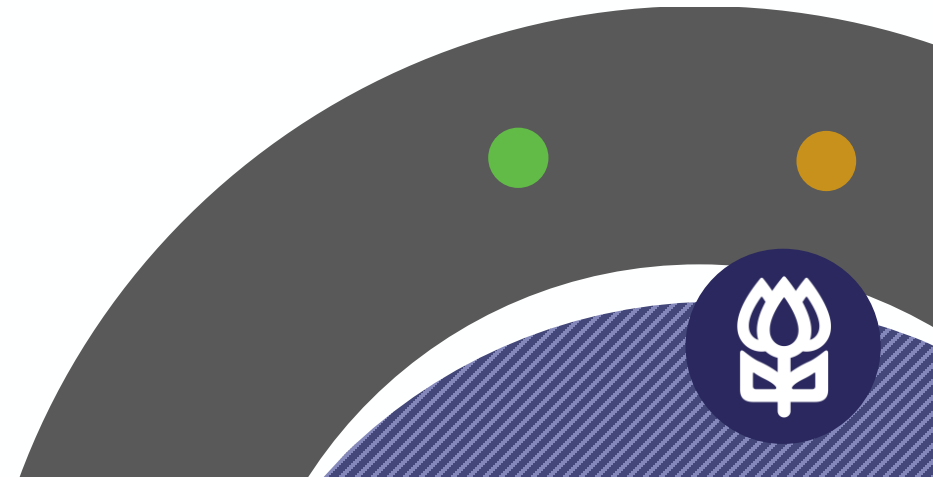
Use of convalescent plasma

- Registration in Expanded Access protocol
 - Institution and physician
 - Patient
- Emergency IND for single patient
 - Acquired by physician
- Other IRB-approved protocols



Expanded Access Protocol

- Patient eligibility
 - 18 years old [younger must use emergency IND pathway]
 - Laboratory confirmed SARS-CoV-2 infection
 - Severe or life-threatening disease, or at high risk of progression to that
 - Informed consent by patient or proxy



Severe or life-threatening disease

- Life-threatening disease defined as any of:
 - Respiratory failure
 - Septic shock
 - Multiple organ dysfunction or failure
- Severe disease defined as any of
 - Dyspnea
 - Respiratory freq $\geq 30/\text{min}$
 - Blood oxygen saturation $\leq 93\%$
 - Lung infiltrates $\geq 50\%$ within 24-48 hours
 - Partial pressure of art oxy to fraction of inspired oxygen ration ≤ 300

Emergency IND protocol

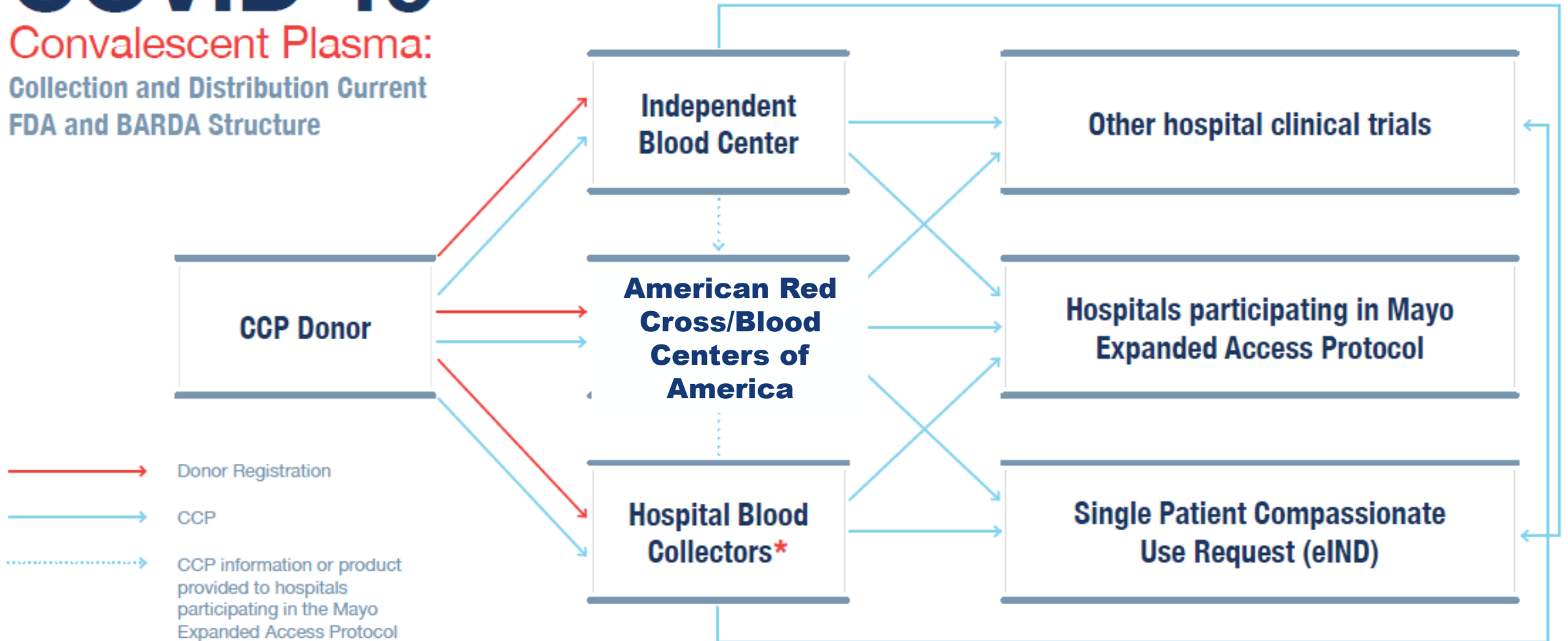
- eIND
- Appropriate for single patient use, where approval is needed within 4-8 hours
- Form online
- Submit by email
- IRB approval in advance not required by FDA; FDA recommends that hospitals notify IRB after the fact
- Products from blood center, reimbursement from hospital
- No BARDA payment
- Only option for children; not eligible for Expanded Access



COVID-19

Convalescent Plasma:

Collection and Distribution Current
FDA and BARDA Structure

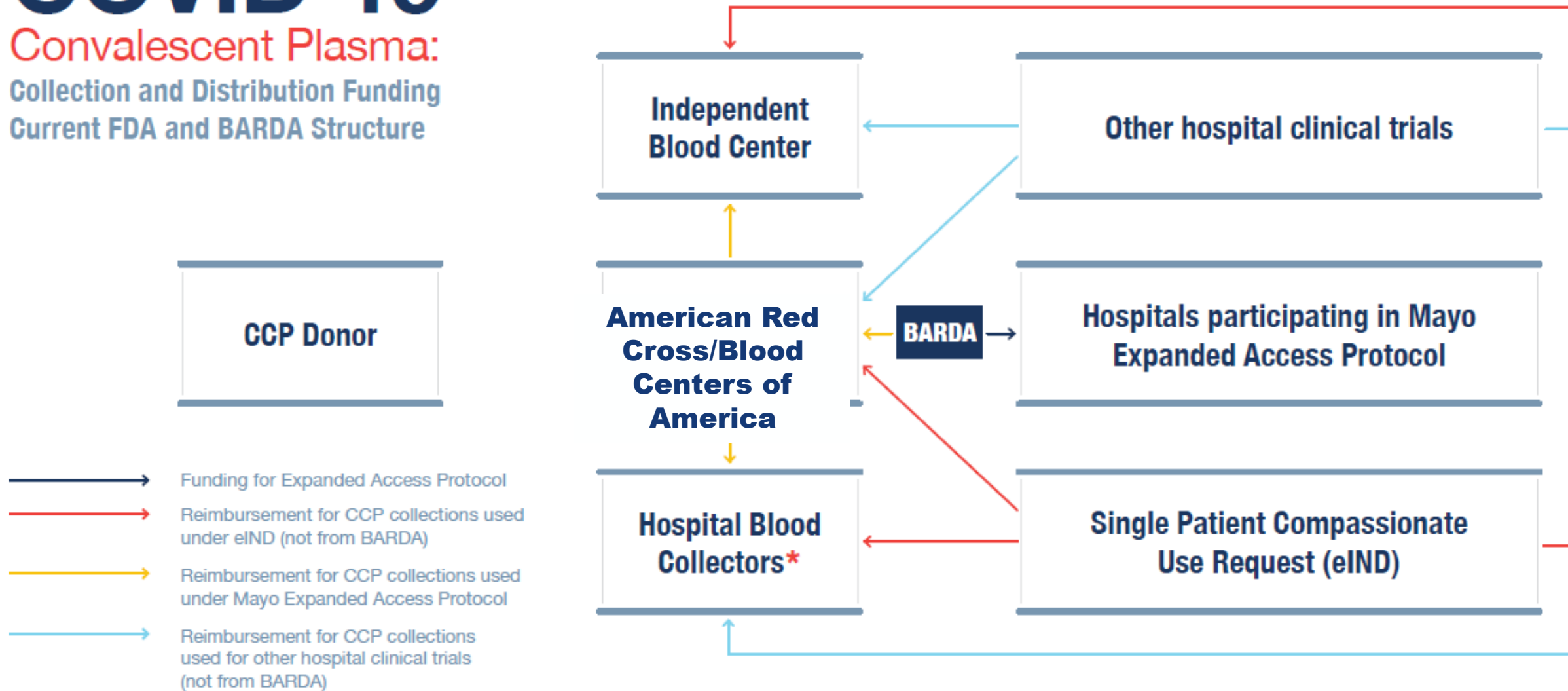


*Hospital blood collectors will likely use the CCP they collect internally.

COVID-19

Convalescent Plasma:

Collection and Distribution Funding
Current FDA and BARDA Structure



*Hospital blood collectors will likely use the CCP they collect internally.



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Gulf Coast Regional Blood Center
Houston, TX 77054
FDA Registration Number 1676569

Properly identify intended recipient.
See circular of information for indications,
contraindications, cautions, and methods of infusion.
This product may transmit infectious agents.
Rx Only

VOLUNTEER DONOR



E9754V00

**APHERESIS
CONVALESCENT PLASMA
COVID – 19**

200 mL containing approx 60 – 120 mL
ACD – A
Store at – 18 C or colder
1st container

Caution: New Drug – Limited by Federal
(or United States) law to
Investigational use



8400

AB

Rh POSITIVE



1211002359

10 APR 2121

Expiration
Date

**Convalescent
plasma label**



Helpful resources

- AABB
 - covidplasma.org
 - Resources for clinicians, hospitals, collectors
 - Links to eIND and Mayo IRB forms
- FDA
 - Guidance: Investigational COVID-19 Convalescent Plasma
 - <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/investigational-covid-19-convalescent-plasma>
- Mayo protocol
 - uscovidplasma.org

