Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
tional studies have stimulated global interest in the organisation of collection systems for this “convalescent plasma” (CP). It is recognised that this modality’s evidence base requires confirmation, and that a more standardised product for the delivery of antibodies to COVID-19 would be a hyperimmune immunoglobulin (lg) manufactured industrially from CP, as is provided for other interventions [3]. The availability of such an lg product would be valuable, in the first instance, in providing prophylactic protection to individuals at higher risk of acquiring COVID-19 infection, including health care workers and, if supply permits, individuals with co-morbidities. In the interim, the use of CP, if confirmed through further studies, is needed to treat patients suffering from infection. The establishment of global networks for the collection of CP, including the recent establishment of a “Plasma Coalition” bringing together a number of for-profit and not-for-profit plasma product manufacturers [4] is a commendable development in international collaboration. This plasma is intended, presumably, for the manufacture of hyperimmune lg. This global effort, and similar systems under development within a number of countries, need to be managed carefully in order to ensure the continued supply of CP for the treatment of patients suffering from COVID-19 infection. In particular, in geographies covered by the “Plasma Coalition” [5] where paid plasma donation exists in tandem with the voluntary mainstream voluntary blood system, there is a risk that donations of CP may be deflected from the hospital based transfusion sector to the industrial environment. It is noteworthy that the manufacture of intramuscularly delivered immunoglobulins through the mainstream fractionation processes, which include hyperimmune industrial lg, results in the loss of ca half the donated protein over the course of fractionation [6]. Until technologies which promise higher yields and which are more suited to the small volumes collected from immunised donors are available [7,8] it is therefore preferable that the collection of CP for the treatment of patients continues unhampered until the epidemic wanes and the urgent need of transfusable CP decreases. In the interim, donor panels for hyperimmune lg production may be constructed and an optimal path for the provision of this medicine may be developed, hopefully with harmonisation between the major regulatory agencies. This parallel path will cover the demand for treatment as well as generating hyperimmune lg for the protection of select groups. For the general population, provision of enough lg is unlikely and will not provide long-term protection, and hence a vaccine is eagerly awaited.

Finally, in the rapidly developing field of therapeutics to Covid-19 infection, continued vigilance is required to ensure ethical principles are maintained. Convalescent plasma harvested from voluntary donors in state blood services is at risk of being deflected from therapeutic use through preferential patient allocation to clinical trials for other Covid-19 therapies funded by large pharmaceutical companies. The evidence base of some of these therapies is nebulous, and patient allocation to such trials, which needs to include control arms, may result in disadvantage to patients [9]. Given the continued body of evidence and public effort in the collection and use of convalescent plasma, it is to be hoped that this treatment will be considered as a first line modality and will not be obstructed by commercial considerations. In particular, a transparent, publicly-driven process is required, given that mechanisms have been developed to facilitate commercial companies’ access to patients and patient organisations, a development which needs to be viewed with concern [10].

Disclosures of interest

The author declares that he has no competing interest.

References

[1] Shen C, Wang Z, Zhao F, Yang Y, Li J, Yuan J, et al. Treatment of 5 Critically Ill Patients With COVID-19 With Convalescent Plasma. JAMA 2020.
[2] Duan K, Liu B, Li C, Zhang H, Yu T, Qiu J, et al. Effectiveness of convalescent plasma therapy in severe COVID-19 patients. Proc Natl Acad Sci USA 2020.
[3] Huo HJ, Safdar N. Polyclonal immunoglobulins and hyperimmune globulins in prevention and management of infectious diseases. Infect Dis Clin North Am 2011;25:773–88.
[4] Global Plasma Leaders Collaborate to Accelerate Development of Potential COVID-19 Hyperimmune Therapy [Internet]; 2020 [cited 2020 Apr 13]. https://www.takeda.com/newsroom/newsreleases/2020/global-plasma-leaders-collaborate-to-accelerate-development-of-potential-covid-19-hyperimmune-therapy/.
[5] Donor centers for convalescent plasma [Internet]; 2020 [cited 2020 Apr 13]. https://www.donatingplasma.org/donation/find-a-donor-center.
[6] Oncley JL, Melin M, Richert DA, Cameron JW, Gross PM. The Separation of the Antibodies, Isoagglutinins, Prothrombin, Plasminogen and β1-Lipoprotein into Subfractions of Human Plasma. J Am Chem Soc 1949;71:541–50.
[7] Li G, Stewart R, Conlan B, Gilbert A, Roeth P, Nair H. Purification of human immunoglobulin G: a new approach to plasma fractionation. Vox Sang 2002;83:332–8.
[8] Newcombe AR, Cresswell C, Davies S, Watson K, Harris G, O’Donovan K, et al. Optimised affinity purification of polyclonal antibodies from hyper immunised ovine serum using a synthetic Protein A adsorbent, MABSOURCE® A2P. J Chromatography B 2005;819:209–15.
[9] Borba MCS, Val F, de A, Sampaio VS, Ara, amp MA, et al. Chloroquine diphosphate in two different dosages as adjunctive therapy of hospitalized patients with severe respiratory syndrome in the context of coronavirus (SARS-CoV-2) infection: Preliminary safety results of a randomized, double-blinded, phase IIb clinical trial (CloroCovid-19 Study). medRxiv 2020;16, 2020.04.07. 20056424.
[10] Misesa E. Physicians And The Patient Recruitment Problem [Internet]; 2017 [cited 2020 Apr 29]. https://www.clinicalleader.com/doc/physicians-and-the-patient-recruitment-problem-0001.

A. Farrugia

Faculty of Health and Medical Sciences, University of Western Australia, Crawley 6009, Australia
E-mail address: albert.farrugia@uwa.edu.au

Use of convalescent plasma in COVID-19 patients in China

To the Editor-As of 10:00 on 28 April 2020, there still remained 2,954,222 confirmed Coronavirus Disease 2019 (COVID-19) cases, according to data provided by WHO [1]. In the seventh edition treatment and diagnosis guideline of COVID-19 published by the National Health Commission on Mar 3, scientists have reached a consensus that the plasma of convalescent patients contains antibodies that the therapy so far has proved to be a safe and effective for critical symptoms, as well as patients with rapid onset of COVID-19 [2]. Donors must be recovered patients who are up to the standard for being discharged from hospital. During the SARS and Ebola epidemic, we also used the plasma of recovered people to treat infected patients [3,4]. International Council for Commanality in Blood Banking Automation has fast-tracked the release of new product description codes for convalescent plasma of COVID-19 patients.

China has developed convalescent plasma to treat patients who are infected with the COVID-19 and epidemic begins to subside in China. The therapy aims to use the antibodies in the convalescent plasma to neutralize the presence of the virus in patients. The patients have shown improved clinical symptoms about 12 to 24 hours after they received convalescent plasma, with main inflammatory indexes decreased significantly and some key

Abbreviations: COVID-19, Coronavirus Disease 2019; CSS, cytokine storm syndrome.
indexes such as blood oxygen saturation improving comprehensively. During the COVID-19 outbreak, China established dedicated expert task force both on the national and local levels respectively to analyze and improve the production and treatment of plasma therapy. There have been mature conditions for scale application of the therapy in China.

Clinical practice shows the convalescent plasma should be early infused to ensure a better therapeutic effect. The treatment effect of recovered plasma in the treatment of critical. There are some experiences worthy of our share in convalescent plasma collection and infusion. The peak value of IgG antibody produced in COVID-19 patients conforms to the general rule. COVID-19 patients with cytokine storm syndrome (CSS) could not donate plasma after recovery. Plasma donation won't hurt the donor once he or she has been discharged from the hospital for 14 days. A convalescent patient had better donate plasma only once. Besides normal components and specific IgG antibodies, convalescent plasma contain no other pathogenic substances and components. Convalescent plasma was prepared into freeze-dried or concentrated blood products, which is convenient for management and application, especially responding to emergencies. The curative effect of convalescent plasma is closely related to the quality, dose, antibody titer and infusion time of the plasma. The recovery plasma dose was determined according to the patient's viral load. In order to reduce the adverse reaction of transfusion and improve the clinical curative effect, the patients should be given promethazine hydrochloride or dexamethasone before convalescent plasma infusion. When using recovery plasma to treat infected patients, we should adhere to the individualized treatment and avoid the adverse consequences caused by following the same pattern.

Transfusion therapy is an ancient and novel technique. Ozone autotransfusion therapy has been used in antiviral therapy for more than 20 years. Madrid Declaration on Ozone Therapy (2nd Edition) officially issued by International Scientific Committee of Ozone Therapy in 2015, gives a detailed description of antiviral ozone antotransfusion therapy [5]. Combined with COVID-19 pneumonia clinical characteristics, ozone autotransfusion therapy could increase blood oxygen saturation, improve tissue hypoxia and reduce incidence of multiple organ failure caused by CSS. Scientists are studying the feasibility of ozone autotransfusion therapy in COVID-19 pneumonia patients in China. According to incomplete statistics, there are no less than 1000 hospitals in China that have carried out this technology, the operation is simple and easy to master, and no serious adverse events related to this technology have been found. We successfully applied of the technique to therapy a COVID-19 patient in Hubei province, China.

Authors’ contributions

HKM gathered information and drafted the manuscript. ZM and ZZJ co-designed the study and helped writing the manuscript. All authors read and approved the final manuscript.

Funding

None.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Disclosure of interest

The authors declare that they have no competing interests.

Acknowledgements

Not applicable.

References

[1] World Health Organization. Coronavirus disease 2019 (COVID-19) Situation Report–99; 2020. https://www.who.int/docs/default-source/coronavirusesituation-reports/20200428-sitrep-99-covid-19.pdf?sfvrsn=1196c181_2.
[2] National Health Commission of the People’s Republic of China. Diagnosis and treatment of novel coronavirus pneumonia (7th ed); 2020. http://www.nhc.gov.cn/yzygj/s7653p/202003/46c5294a7dfe4ce8bdc7f95912eb1f989.html.
[3] Cheng Y, Wong R, Soo YO, et al. Use of convalescent plasma therapy in SARS patients in Hong Kong. Eur J Clin Microbiol Infect Dis 2005;24:44–6.
[4] Brown JF, Dye JM, Tozay S, et al. Anti-Ebola virus antibody levels in convalescent plasma and viral load after plasma infusion in patients with Ebola virus disease. J Infect Dis 2018;218:555–62.
[5] Schwartz-Tapia A. Madrid Declaration on Ozone Therapy. 2th ed. Madrid: ISC03; ISBN 978-84-606-8312-4; 2015.50p.

M. Zhu*1
K. Hu1
Z. Zhu

Department of Clinical Laboratory, The Affiliated Chaohu Hospital of Anhui Medical University, No. 64, ChaoHu North Road Chaohu City, Anhui Province, 238000 China

* Corresponding author.
E-mail addresses: meizhu532@sina.com (M. Zhu), 2487590340@qq.com (K. Hu), 2465537231@qq.com (Z. Zhu)

1 Contributed equally.

https://doi.org/10.1016/j.traccl.2020.05.001
1246-7820/©2020 Published by Elsevier Masson SAS on behalf of Société française de transfusion sanguine (SFTS).

A quick “Can I donate blood” self-assessment tool amid the COVID-19 outbreak

Sir,

A novel coronavirus (nCoV) suddenly got into our site from Wuhan in December 2019 [1]. This nCoV was subsequently renamed Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), and besides the disease it causes as Coronavirus Disease-2019 [COVID-19]. The outbreak of COVID-19 has stomped the health care system in almost all the nations of the world [2]. Blood Transfusion Services [BTS] at each hospital, hold a primary position and facilitate the smooth functioning of all elective and urgent surgical interventions including various traumas, emergency, obstetric and cancer care throughout a duration of 24x7. One of the major challenges ahead of us is to maintain high spirits and persistent enthusiasm among volunteer donors to continue donating their whole blood [WB], even during this pandemic. We believe that there might be a lot of paranoia, uncertainty and false assumptions in the minds of donors about blood donation amid this pandemic. In addition, due to the government’s interventions, such as mass lockdown and containment measures for social gatherings, in the wake of this COVID-19 outbreak, the arrangement of voluntary blood donation drives has been barred [3]. Likewise, the general public has been reluctant to come to hospital-based blood centers to donate blood. This has led to a significant reduction in