



ANALYSIS OF PLANNING OF PREPARATION OF BLOOD FROM DONORS IN THE REPUBLIC OF KARAKALPAKSTAN

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Article history:	Abstract:
Received: February 1 st 2023 Accepted: March 1 st 2023 Published: April 6 th 2023	In order to develop optimal methods for determining the need for blood components in medical institutions, plans and reports on blood procurement over the past 10 years, the number of beds by districts, population statistics, data on bed-days of treatment of patients in the Republic were analyzed and studied Karakalpakstan (RKK). Based on the studies and calculations, the norms for the collection of blood components over the past 10 years were determined and compared with the indicators planned and prepared by the RKK blood service. A large discrepancy between the planning of blood procurement from donors and the current regulatory documents was revealed. In order to review the methods for determining the need for blood, it was recommended to conduct separate studies in each narrow area.

Keywords: blood service, blood collection, planning

RELEVANCE OF THE TOPIC. The reforms being carried out in Uzbekistan require the introduction of new technologies, modern diagnostic and treatment methods to all areas of medicine. The introduction of these innovations provides an opportunity to save blood components in practice [2, 5]. But complex operations on the heart, the development of transplantation - organ transplant procedures and a large number of births increase the demand for donor blood several times. Along with the development of transportation and technology, the increasing traumatism urgently requires blood components. Therefore, the blood service is faced with the issue of preparing more blood components every day. Studies have shown that there is a large discrepancy in the planning of blood preparation from donors according to the current regulatory documents [7]. For this reason, it was recommended to make a plan for preparing blood from donors in the blood service according to the recommendations of the World Health Organization at the rate of 10 donors per 1000 population (1% of the population) [1, 3, 4]. In addition, it is necessary to carry out separate studies on each of the narrow areas in order to revise the methods of determining the need for blood. In this regard, each region of our Republic, as well as its province, has its own characteristics.

In general, the activity of the Republican blood service is based on the Law of the Republic of Uzbekistan "On Donation of Blood and its Components", the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated November 27, 2014 "On Additional Measures to Implement the Law of the Republic of Uzbekistan on Donation of Blood and Its Components" "Decision No. 324 (Decision of the Ministry of Health No. 324) and the Ministry of Health dated December 16, 2013 "On

Approval of the Regulation on the Procedure for Donating Blood and Its Components" No. 423 and Collection of Donor Blood and Its Components dated April 6, 2015 , on the order of preparation, processing, storage and their use" is carried out in accordance with orders No. 153.

Currently, the service of working with blood in the health care system is the Republican Blood Transfusion Center, Tashkent City "Blood Preparations" Scientific Production Enterprise (IICHK), blood transfusion station of the Republic of Karakalpakstan and 1 It consists of 2 regional blood transfusion stations, 2 blood transfusion stations of republican institutions and 199 blood transfusion departments (blood banks).

So, today in the Republic of Karakalpakstan, is there enough donor blood, is it prepared in the required amount, and how much blood is needed to meet the demand of treatment and prevention institutions? We conducted our research today to find answers to these questions.

THE PURPOSE OF THE WORK: to develop optimal methods of determining the need for blood components of medical institutions in the Republic of Karakalpakstan.

MATERIALS AND METHODS OF LEARNING. Plans and reports on blood preparation in the Republic of Karakalpakstan for the last 10 years, the number of places in the district section, the statistics of the population of the republic, data on the days of treatment of patients were analyzed and studied.

The obtained results and their discussion. The results showed that the volume of blood preparation and the number of donations in the republic increased 3 times



in 10 years (2013-2022) (Fig. 1). In 2013, 8,669 blood (plasma) donations were registered in the republic and 3,678.5 liters of pure blood were prepared. In 2022, blood (plasma) donations were 25,362 and 12,718.8 liters of pure blood were prepared.

The number of donations per 1,000 inhabitants increased 2.5 times (Table 1). Taking into account the fact that the population growth during this period was much less compared to the indicator of the Republic of Uzbekistan, the indicator of the QQR in terms of the number of donations was the highest. In the republic, this indicator was 7.4 per 1000 inhabitants (0.74% of the population) in 2022, while in the Republic of Kazakhstan 12.8 per 1000 inhabitants (1.28% of the population) are blood donors.

Annual plans for blood preparation from donors were determined in the following ways:

1. According to SSV order No. 40 of 01.30.2004 "On introduction of the procedure for planning, financing and reporting of blood preparation in the health care system" (SSV order 40), the number of blood donations (number of donations) is 0.25 of the number of hospitalized patients is determined by multiplying by the coefficient, or in other words, one out of every four patients admitted to the hospital will need blood.

2. Annex 3 of the Cabinet of Ministers of the Republic of Uzbekistan Decision No. 324 dated November 27, 2014 "On Additional Measures for the Implementation of the Law of the Republic of Uzbekistan "On Donation of Blood and Its Components" specifies the need for blood components for various areas of DPM was calculated using the norms [6].

3. According to the recommendations of the WHO, the population's need for blood is determined by the ratio of blood donors per 1000 people. Accordingly, in order to fully satisfy the population's demand for blood and blood products, the number of blood donations should be 30 or more per 1,000 people, and to provide the population with blood components only, the number of blood donations should be at least 10 per 1,000 people or 1% of the population [1].

According to the conducted inspections and calculations, the standards of preparation of blood components in the last 10 years were determined and compared with the indicators planned and prepared by the blood service in the Republic of Kazakhstan (Table 2).

Planning shows that in 2013, 3570.0 liters of blood preparation is planned according to the NRC (actually 3678.0 liters were prepared). This plan's indicator is 1.6 times less than the calculation according to the decision of the Ministry of Health No. 324, 2.1 times less than the WHO indicator, 8.5 times less than the indicator of SSV Order 40. Compared to the prepared amount, it is almost as much less.

In 2014, 4402.2 liters of blood was actually prepared without changing the plan. The indicator of this plan is 1.5 times less than the calculation according to the decision of the Ministry of Health No. 324, 2.2 times less than the indicator of the WHO, and 8.7 times less than the indicator of SSV Order 40. Due to the fact that the prepared amount exceeded the plan by 23%, the difference in the middle decreased, that is, 1.2, respectively; 1.8; 7 times less.

It is planned to prepare 3600.0 liters of blood in 2015 and 2016 (actually in 2015 - 4450.2 liters, in 2016 - 3744.5 liters were prepared). The indicator of this plan is 1.4 times higher in 2015, 1.58 times in 2016, 2.2 times higher than the WHO indicator in 2015 and 2016, 8 times higher than the indicator of SSV Order 40 in 2015, 7 times, in 2016 - 8.9 times less. As the prepared amount increased by 24% from the plan in 2015, the difference between the two was further reduced, i.e. 1.1, respectively; 1.8; 7.0 times less. Since the amount prepared in 2016 did not differ much from the plan, there is no change in the comparative indicators.

In 2017, the blood preparation plan increased by 43% to 5175.0 liters (actually 6127.9 liters were prepared). The indicator of this plan in 2017 is 1.4 times more than the calculation according to the decision of the Cabinet of Ministers No. 324, and the prepared amount is 1.7 times more. However, it is 1.58 times less than the WHO indicator, and 6.5 times less than the indicator of SSV Order 40. The prepared amount is 1.3, respectively; 5.5 times less.

In 2018-2020, the difference between the blood preparation plans and the calculations based on the 3 compared documents remained, but the amount of blood prepared in practice due to the fact that it was much higher than the plan, this difference decreased and changed in the opposite direction. That is, the amount of prepared blood is 1.1 times more in 2018, 1.44 times in 2019, and 1.35 times more in 2020 than the calculation according to the decision of the Ministry of Health No. 324. It corresponds to the WHO indicator. In 2018 – 4.8 times, in 2019 – 4.3 times, and in 2020 – 3.1 times less than the indicator of SSV Order 40.

It is planned to prepare 6840.0 liters of blood in 2021 (actually 11512.0 liters were prepared). The indicator of this plan is 1.2 times more than the calculation according to the decision of the Ministry of Health No. 324, 1.2 times less than the WHO indicator, 4.8 times less than the indicator of SSV Order 40. Due to the fact that the prepared quantity exceeded the plan by 68%, the difference in the middle changed almost twice, that is, 2 times more, respectively; 1.3 times more; 2.8 times less.

It is planned to prepare 8055.0 liters of blood in 2022 (actually 12718.8 liters were prepared). The indicator of this plan is 1.13 times more than the calculation according to the decision of the Ministry of Health No.



324, almost equal to the WHO indicator, and 4.3 times less than the indicator of SSV Order 40. Due to the fact that the prepared amount exceeded the plan by 58%, the difference in the middle changed almost twice, that is, 1.8 times more, respectively; 1.4 times more; 2.7 times less.

In 8 of the last 10 years, the blood preparation plan from donors in the QKR blood service did not comply with the indicators of the plan according to the decision of the Ministry of Health No. 324. Only the planning for 2021-2022 is approaching and corresponds to the principle of providing one out of every 4 patients with a blood component. However, it should be noted that since 2017, due to the increased fulfillment of the tasks of the plan, in practice, in 6 years out of the last 10 years, instead of 2 years, supply according to the above principle has been observed. Despite this, there are interruptions in the supply of blood components to donor blood, especially to patients with rhesus-negative blood group. Therefore, in the future, setting a plan based on the indicators of this decision will not be able to show the full demand of the medical institutions of the QR for donor blood. There was a very large difference (8.5 times) between the indicator according to SSV Order 40 and the plan indicator, and due to the increased plan indicator in recent years, this difference decreased by 2 times, but the statistically significant difference remained. The amount of prepared blood is 3 times less than this indicator. If we discuss the WHO recommendation indicator, which depends on the population, it is 12-14 per 1000 inhabitants in the last 2 years in the QR. This indicator is the optimal indicator that gives the opportunity to determine and conclude the state of blood service, the level of donation, and the state of blood supply in QKR.

SUMMARY:

1. A big discrepancy was found when calculating with the current normative documents in the preparation of annual plans for blood preparation from donors.

2. Despite the fact that the tasks of the plan are fulfilled by the blood service of the Kyrgyz Republic, it is necessary to carry out separate studies in each of the narrow areas in order to fully cover the need for blood.

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Figure 1.
 In 2013-2022, the volume of blood preparation from donors in the Republic of Kazakhstan (in liters)

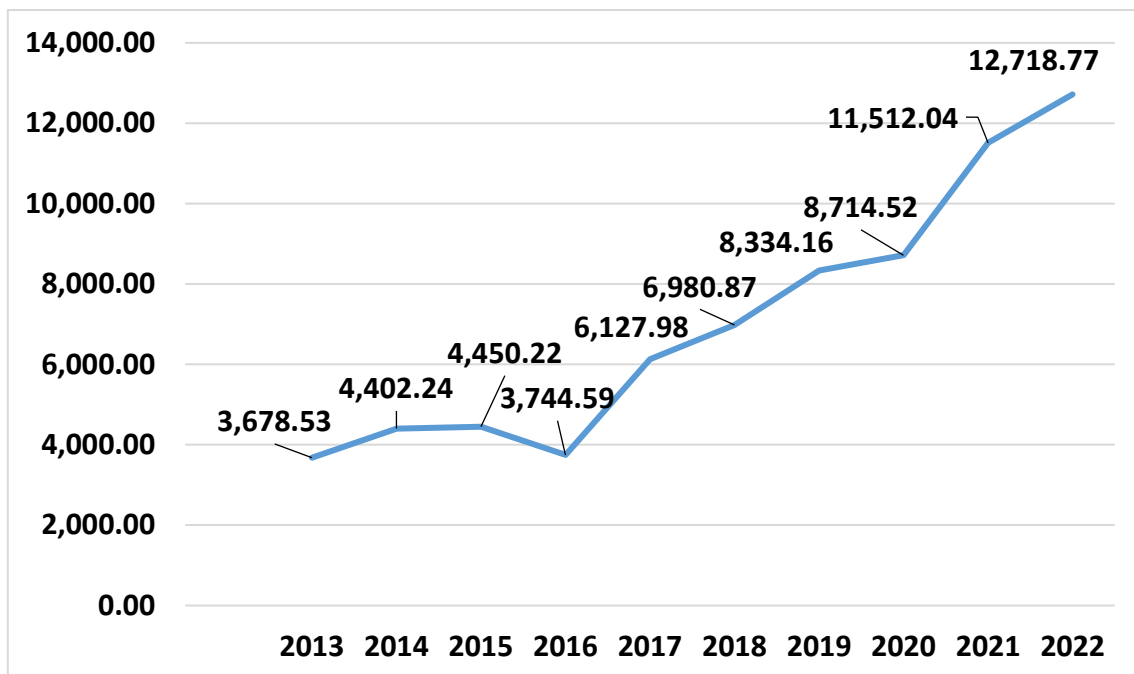


Table 1.
 Rate of blood donations per 1000 population in the Republic of Kazakhstan in 2013-2022

Years	Population, thousand people	Number of donations	Indicator of donations per 1000 inhabitants
2013 year	1 711,80	8 669	5,1
2014 year	1 736,50	9 542	5,5
2015 year	1 763,10	10 029	5,7
2016 year	1 791,10	8 308	4,6
2017 year	1 817,50	13 056	7,2
2018 year	1 842,30	14 404	7,8
2019 year	1 869,80	18 500	9,9
2020 year	1 898,30	18 261	9,6
2021 year	1 939,50	27 084	14,0
2022 year	1 976,30	25 362	12,8

Table 2
 Plan indicators according to regulatory documents, indicators planned and prepared by the Blood Service of the Russian Federation

Years	Regulatory documents				
	BMҚ-324	SSV Order 40	WHO recommendation	Plan of blood service	Practically prepared
2013 year	<u>12694</u> 5712,4	<u>67817</u> 30517,6	<u>17118</u> 7703,1	<u>7933</u> 3570,0	<u>8669</u> 3678,5
2014 year	<u>12006</u> 5402,6	<u>69294</u> 31182,3	<u>17365</u> 7814,2	<u>7933</u> 3570,0	<u>9542</u> 4402,2
2015 year	<u>11320</u> 5094,1	<u>69589</u> 31315,0	<u>17631</u> 7933,9	<u>8000</u> 3600,0	<u>10029</u> 4450,2
2016 year	<u>12671</u> 5702,1	<u>71515</u> 32181,7	<u>17911</u> 8059,9	<u>8000</u> 3600,0	<u>8308</u> 3744,5



2017 year	<u>8015</u> 3606,9	<u>74760</u> 33642,0	<u>18175</u> 8178,7	<u>11500</u> 5175,0	<u>13056</u> 6127,9
2018 year	<u>14086</u> 6338,6	<u>75063</u> 33778,3	<u>18423</u> 8290,3	<u>11800</u> 5310,0	<u>14404</u> 6980,8
2019 year	<u>12852</u> 5783,5	<u>79486</u> 35768,7	<u>18698</u> 8414,1	<u>12000</u> 5400,0	<u>18500</u> 8334,1
2020 year	<u>14298</u> 6434,1	<u>61114</u> 27501,3	<u>18983</u> 8542,3	<u>13000</u> 5850,0	<u>18261</u> 8714,5
2021 year	<u>12539</u> 5642,8	<u>73092</u> 32891,4	<u>19237</u> 8656,6	<u>15200</u> 6840,0	<u>27084</u> 11512,0
2022 year	<u>15841</u> 7128,7	<u>78097</u> 35143,6	<u>19484</u> 8767,8	<u>17500</u> 8055,0	<u>25362</u> 12718,8

In the photo - the number of donations (in absolute terms), in the denominator - the amount of blood (in liters)

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