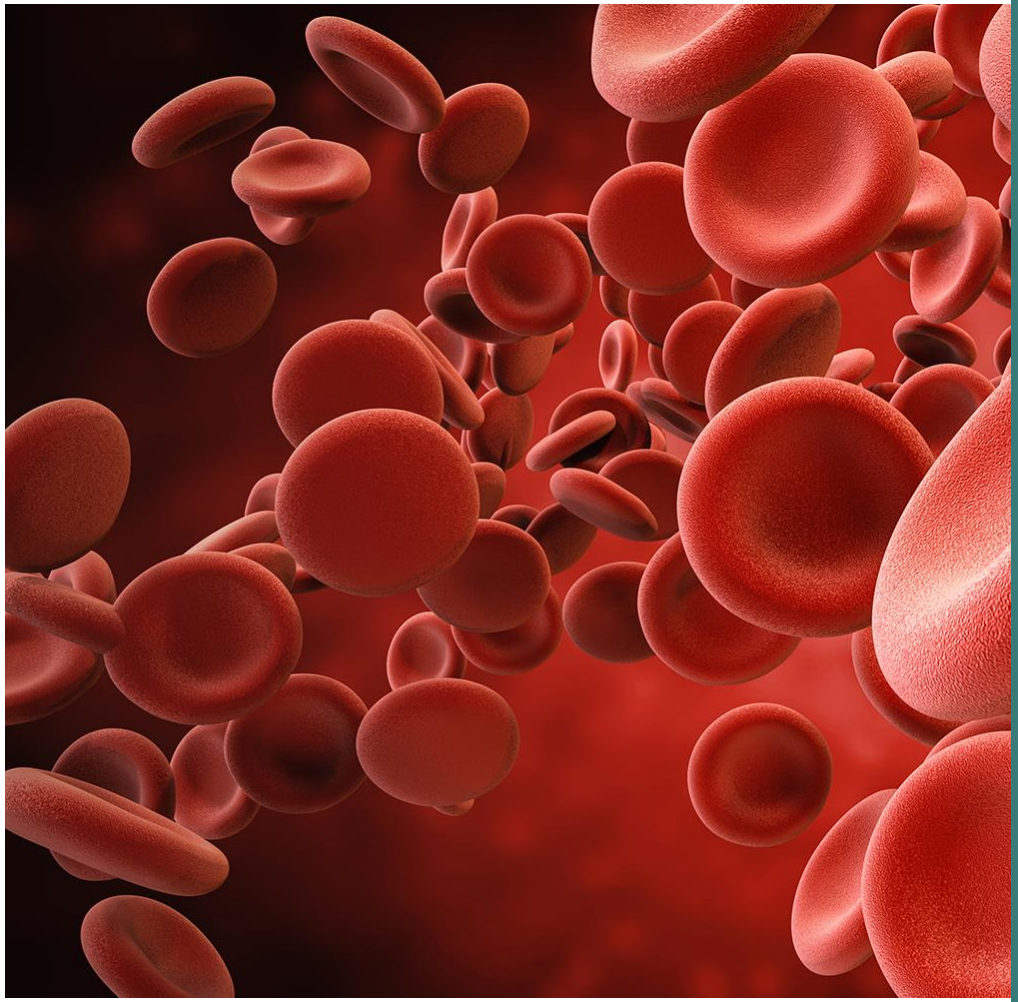


American Red Cross

Empower GROUP O CARE

Promoting Sustainable Stewardship of O Negative Red Cells

April 2025

Caroline Miller, MD
Regional Medical Director
American Red Cross

Disclosures

- American Red Cross Regional Medial Director
- No additional disclosures

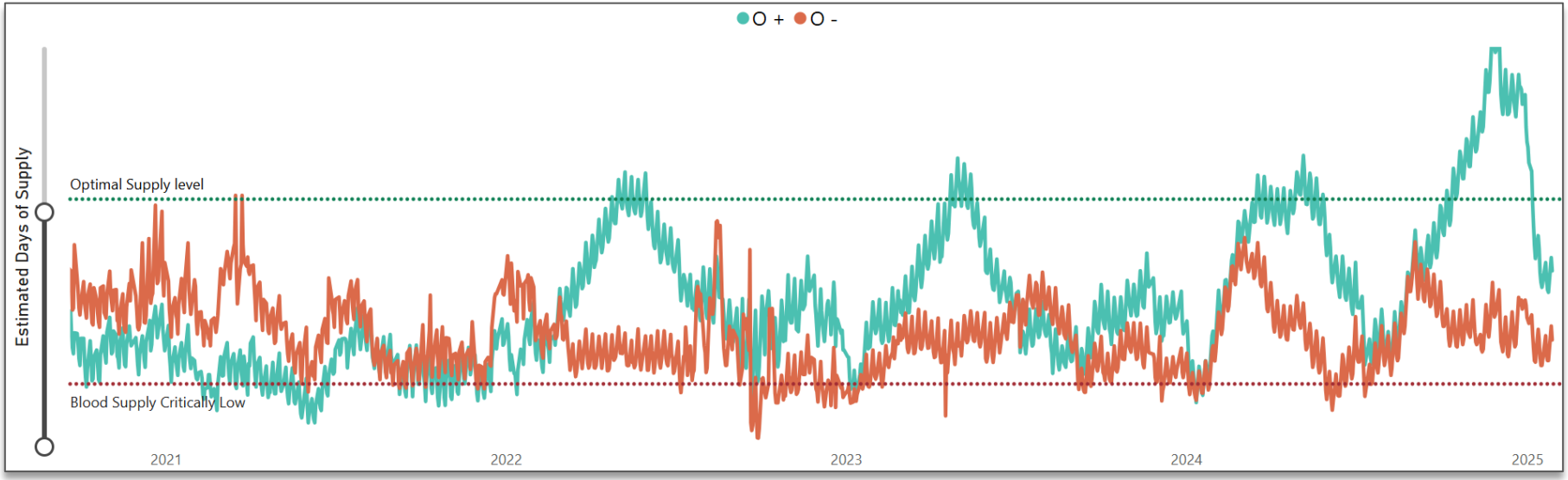
Objectives

- Summarize national trends in supply and hospital utilization of O negative red blood cells
- Describe efforts by the American Red Cross to stabilize O negative red blood cell supply
- Develop strategies members of the healthcare team can employ to reduce overutilization of O negative red blood cells
- Explain the safety of using O positive units for O negative patients

Rationale for Transformation

Industry level data reveals **O negative red blood cells are in chronic short supply.** The supply challenges are further **intensified by a declining donor base** and changing donor demographics. The **trajectory is unsustainable**.

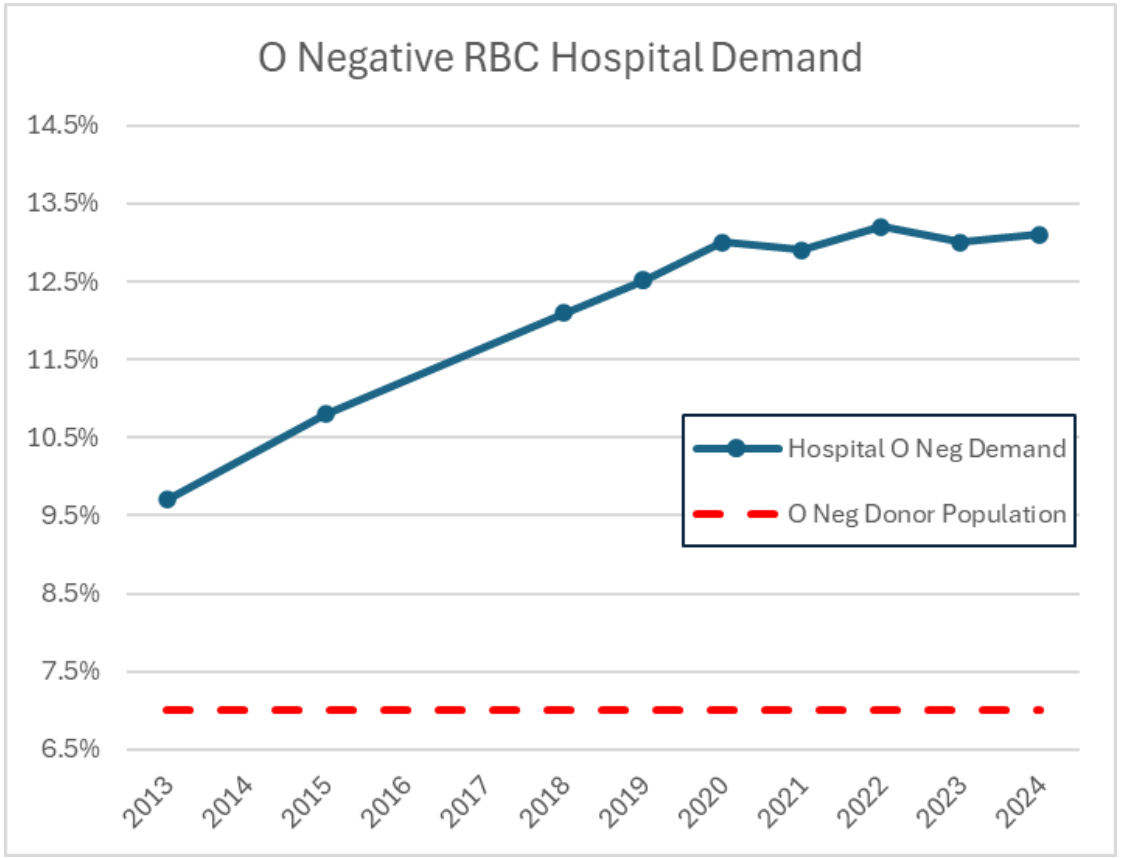
It's our **collective obligation to act now** to ensure product availability for patients who need it most.



*https://www.aabb.org/for-donors-patients/weekly-blood-supply-report

Red Cross O Negative Hospital Demand

Steadily Increasing Over the Past Decade



Avg O negative **patient population** is **6.9%**

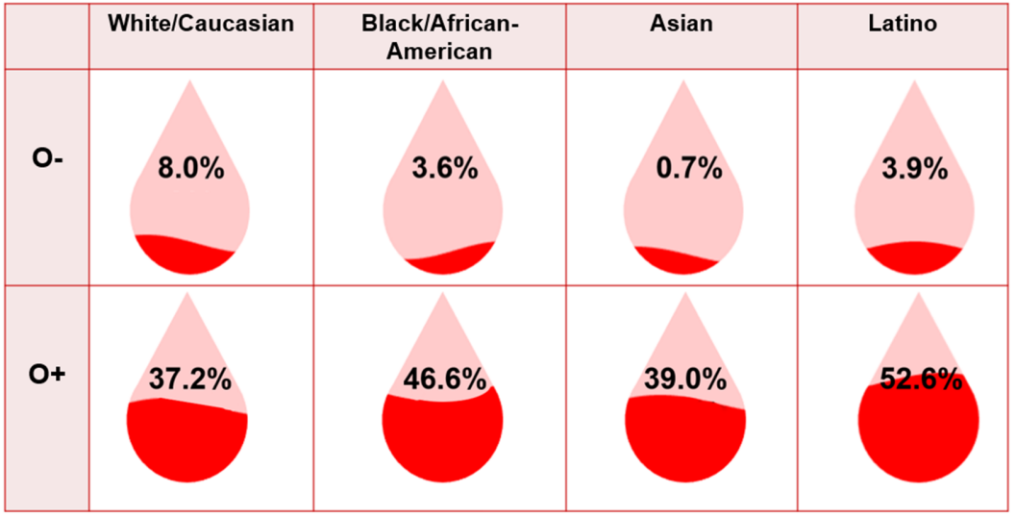
12-month O negative **distributions** are **13.2%**

Resulting in near constant **O negative shortage**

Changing Donor Demographics

Our ability to collect O negative blood at rates well beyond the naturally occurring donor population is not sustainable.

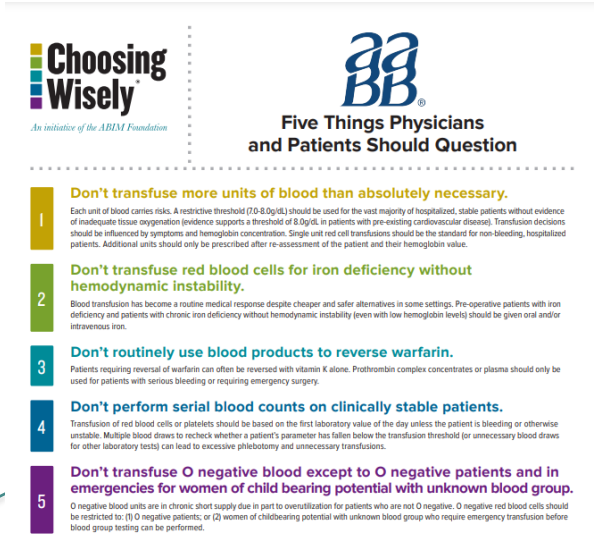
- According to U.S. 2020 Census Data, America's population is aging and experiencing slower growth. The U.S. population age 65 and over, reached 55.8 million, a 38.6% increase in just 10 years.
- The aging population is bolstered by an array of younger racial and more ethnically diverse groups—many of which identify as more than one race.
- The Latino population is US' second largest racial or ethnic group and second fastest growing (expected to be 30% of US population by 2060)



Garratty G, et al. ABO and Rh(D) phenotype frequencies of different racial/ethnic groups in the United States. Transfusion 2004;44:703-706.

Choose Wisely Campaign

The American Board of Internal Medicine's *Choosing Wisely* campaign incorporated AABB recommendations on O negative use. The campaign was designed to help physicians and patients engage in conversations to reduce the overuse of tests and procedures.



Choosing Wisely
An initiative of the ABIM Foundation

AABB
Five Things Physicians and Patients Should Question

1 **Don't transfuse more units of blood than absolutely necessary.**
Each unit of blood carries risks. A restrictive threshold (7.0-8.0g/dL) should be used for the vast majority of hospitalized, stable patients without evidence of inadequate tissue oxygenation (evidence supports a threshold of 8.0g/dL in patients with pre-existing cardiovascular disease). Transfusion decisions should be influenced by symptoms and hemoglobin concentration. Single unit red cell transfusions should be the standard for non-bleeding, hospitalized patients. Additional units should only be prescribed after re-assessment of the patient and their hemoglobin value.

2 **Don't transfuse red blood cells for iron deficiency without hemodynamic instability.**
Blood transfusion has become a routine medical response despite cheaper and safer alternatives in some settings. Pre-operative patients with iron deficiency and patients with chronic iron deficiency without hemodynamic instability (even with low hemoglobin levels) should be given oral and/or intravenous iron.

3 **Don't routinely use blood products to reverse warfarin.**
Patients requiring reversal of warfarin can often be reversed with vitamin K alone. Prothrombin complex concentrates or plasma should only be used for patients with serious bleeding or requiring emergency surgery.

4 **Don't perform serial blood counts on clinically stable patients.**
Transfusion of red blood cells or platelets should be based on the first laboratory value of the day unless the patient is bleeding or otherwise unstable. Multiple blood draws to recheck whether a patient's parameter has fallen below the transfusion threshold (or unnecessary blood draws for other laboratory tests) can lead to excessive phlebotomy and unnecessary transfusions.

5 **Don't transfuse O negative blood except to O negative patients and in emergencies for women of child bearing potential with unknown blood group.**
O negative blood units are in chronic short supply due in part to overutilization for patients who are not O negative. O negative red blood cells should be restricted to: (1) O negative patients; or (2) women of childbearing potential with unknown blood group who require emergency transfusion before blood group testing can be performed.

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https://www.aabb.org/docs/default-source/default-document-library/resources/choosing-wisely-five-things-physicians-and-patients-should-question.pdf

National Response

AABB

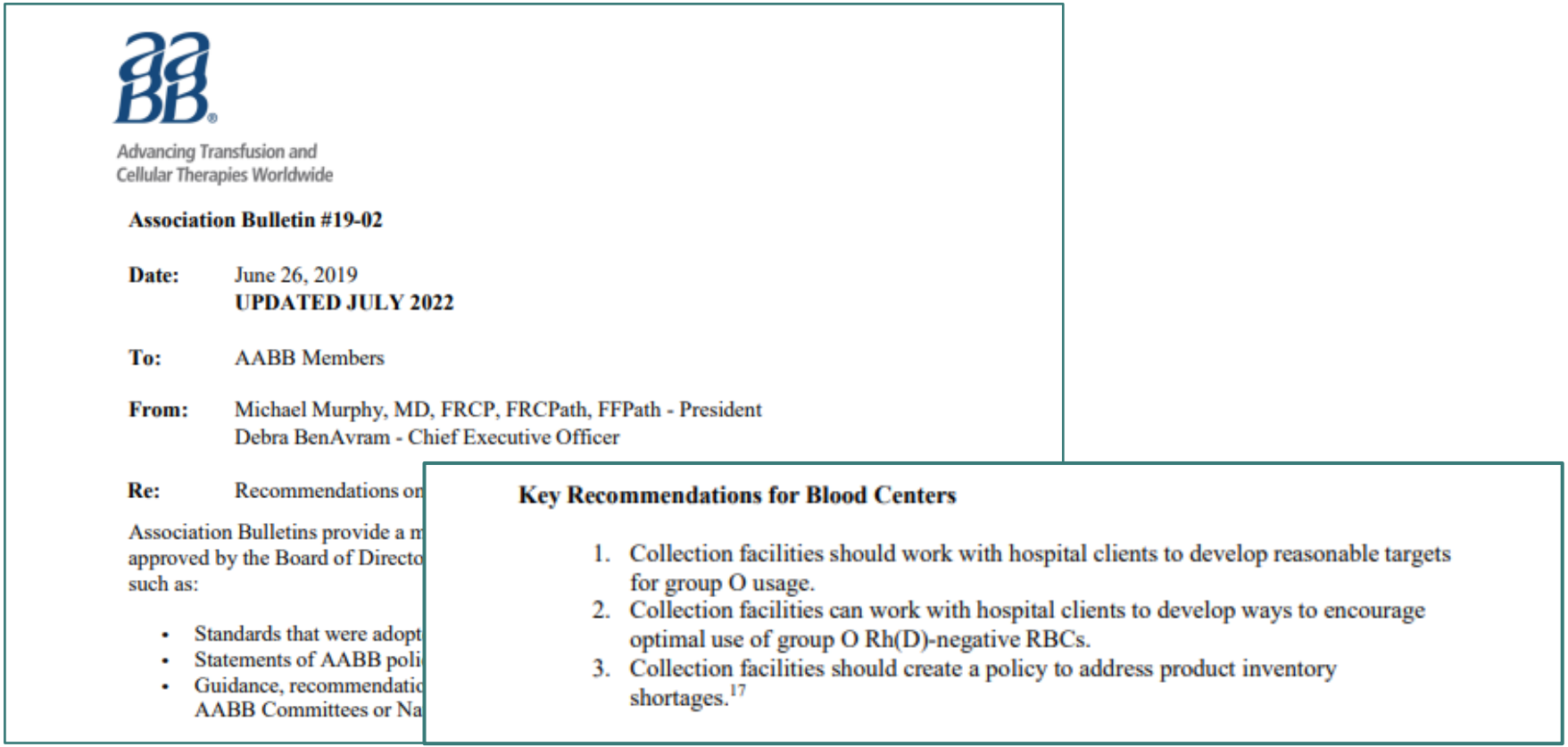
- Association Bulletin #19-02, updated 2022: Recommendations on the use of Group O red blood cells
- AABB Standard Requirement hospital blood banks to monitor "appropriateness of use" for O negative transfusions

Transfuse type-specific, crossmatch-compatible blood whenever possible

Save O negative RBCs for O negative patients and, in an emergency when blood type is unknown, for females of childbearing potential (but switch to type specific as soon as you can!)

https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02.pdf

AABB Best Practice Guidelines



Advancing Transfusion and
Cellular Therapies Worldwide

Association Bulletin #19-02

Date: June 26, 2019
UPDATED JULY 2022

To: AABB Members

From: Michael Murphy, MD, FRCP, FRCPath, FFPath - President
Debra BenAvram - Chief Executive Officer

Re: Recommendations on

Association Bulletins provide a m
approved by the Board of Directo
such as:

- Standards that were adopt
- Statements of AABB poli
- Guidance, recommendatio
AABB Committees or Na

Key Recommendations for Blood Centers

1. Collection facilities should work with hospital clients to develop reasonable targets for group O usage.
2. Collection facilities can work with hospital clients to develop ways to encourage optimal use of group O Rh(D)-negative RBCs.
3. Collection facilities should create a policy to address product inventory shortages.[17]

https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02.pdf

Group O Red Blood Cell Supply Initiative

a shared responsibility

- Fixed Site Expansion
- Power Red Growth
- Diverse Donor Initiatives
- Donor Recruitment and Retention
- Reliable Distribution Targets
- Hospital Education

Strategic Donor Engagement Initiatives

To best meet hospital and patient needs, the Red Cross is focused on building a more resilient blood supply and reducing its reliance on O negative blood. Through strategic donor base engagement and investment in infrastructure, the Red Cross is preparing for the future.

Fixed Site (Permanent Location) Growth –

- The Red Cross aims to better engage donors and heighten community presence by growing its fixed site RBC collections in new and existing markets. **Through FY30, about 20 new sites are being added each year.**

Power Red (Double Red) Growth

- By optimizing the number of units collected at each donation and attracting right type donors, the Red Cross aims to build a stronger and more sustainable blood supply**. Targeting 30% of total red cell units as Power Red collections by FY30.**

Diverse Donor Engagement

- **As the population in the United States changes, the Red Cross is building a more diverse blood supply through outreach and engagement, especially with the Black/African American and Latino Community.**

Why Prioritize Hospital Education?

Literature suggests significant overutilization of O negative red cells by hospitals

Data shows significant variation in % O negative distributions for hospitals of all types and sizes

AABB best practice guidelines recommend blood centers work with hospitals to encourage optimal O negative use and develop appropriate O negative goals

Examining O Negative Overuse

Recent studies indicate a shortage of O negative blood product, stems from **significant overuse** when the type was not required for transfusion.

GROUP Study[1]: 43.2% O negative units given to non-O negative recipients.

Stanford Study[2]: 67% O negative units transfused to non-O negative recipients.

Optimus Study[3]: 44.5% O negative transfusions could have used O positive.

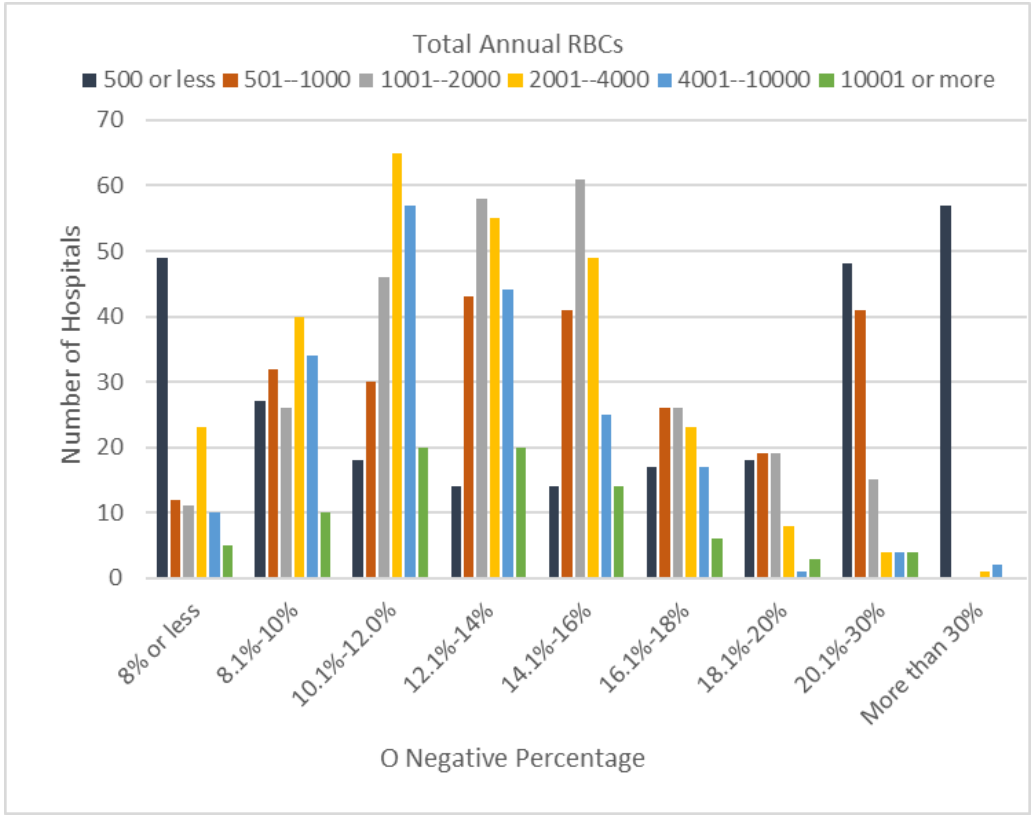
GROUP Study attributes top reasons for overuse to:

- emergency transfusion
- unit near expiration
- meet antigen negative requirement

1. Zeller MP, Barty R, Aandahl A, et al. An international investigation into O red blood cell unit administration in hospitals: the Group O Utilization Patterns (GROUP) study. Transfusion2017;57:2329-37
2. Virk MS, et al. Optimizing O-negative RBC utilization using a data-driven approach. Transfusion. 60:4. Apr 2020: 739-746.
3. Dunbar NM, Yazer MH, for the BEST Collaborative. O– product transfusion, inventory management, and utilization during shortage: The OPTIMUS study. Transfusion 2018;58: 1348-55.

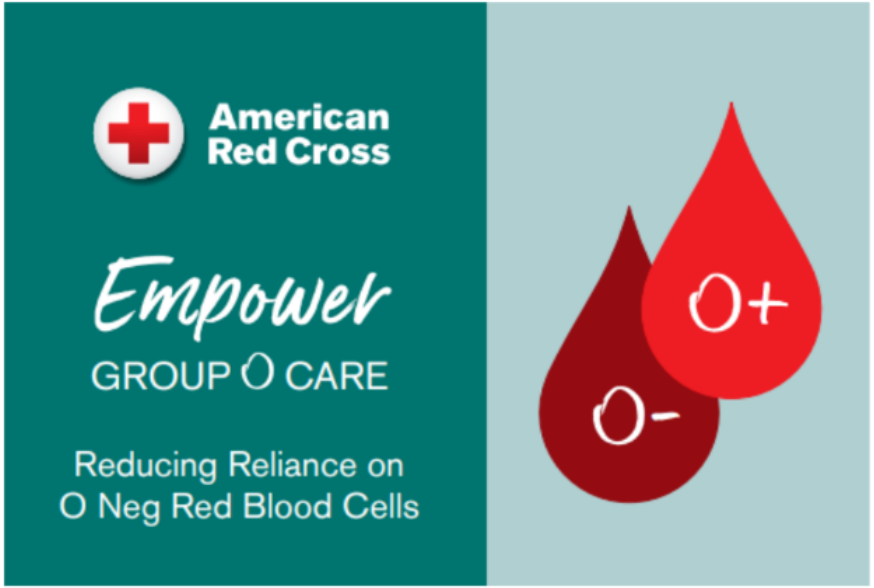
O Negative Distributions

There is significant variation in O negative demand for hospitals of all sizes



Empower Group O Care

***Empower* Group O Care** is a program designed to **strengthen blood supply resiliency by advancing sustainable stewardship practices**. Through education and awareness, we promote responsible use of O negative and O positive blood to ensure these vital resources are readily available for patients when needed.

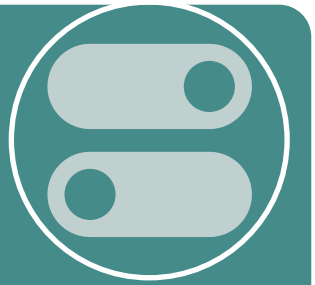


- **Reserve** O negative units for patients that require it.
- **Develop** protocols for emergency transfusions in patients with unknown blood type.
- **Implement** policies to switch patients to O positive sooner.
- **Audit** utilization patterns and identify potential ways to improve O negative stewardship
- **Provide** type-specific red blood cells, including antigen-negative whenever possible.
- **Educate** staff on the risk of alloimmunization and safety of O positive red cells.

Evidence-Based *Empower* Group O Modules

Start Smart

- Evidence-based guidance to start with O positive for emergency transfusions in adult males and females beyond childbearing potential with unknown blood type



Switch Sooner

- Policies on when to transition O negative patients or females of childbearing potential with unknown blood type to O positive to avoid depleting O negative inventory

Know Where Your Os Go

- Tools and resources to conduct group O audits to better understand utilization patterns, and find ways to reduce O negative rates

Safe Choices

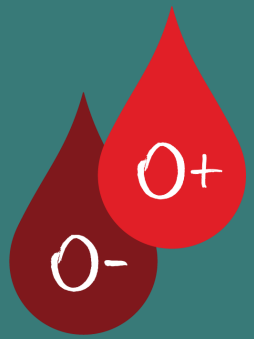
- Examining the risks of using O positive RBCs for emergency transfusion, including females of childbearing potential and patients with anti-D

Right Type Focus

- Guidance for implementing routine practices to order type-specific antigen-negative units in advance of a transfusion

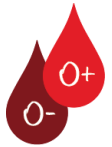
Know Where Your Os Go

Benchmark data are not widely available to guide hospitals in what is appropriate group O Rh(D)-negative usage.



Hospitals should routinely conduct group O audits to better understand usage patterns, identify potential overutilization of O negative blood and develop policies for appropriate usage for their institution.

Common O Negative Audit Findings



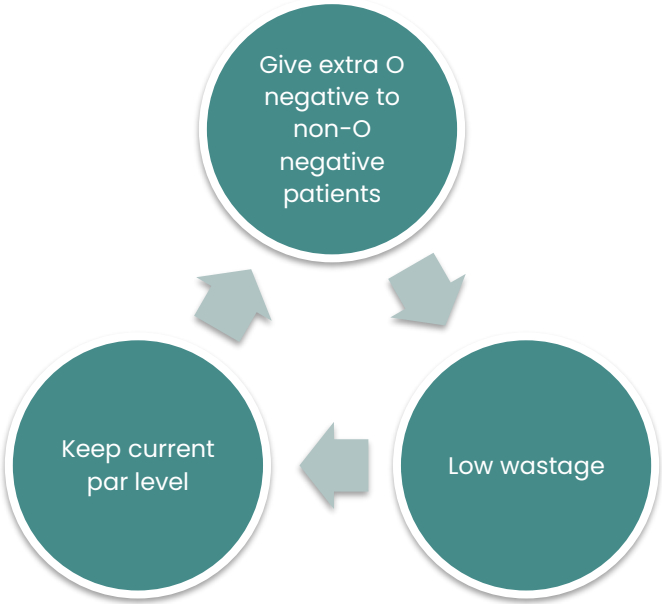
O Negative Transfusions	Potential Intervention
Emergency/MTP: Female of childbearing potential with unknown blood type	None needed
Routine: O Negative patient, Rh negative patient when ABO type not available	None needed
Emergency/MTP: Male or female beyond childbearing potential with unknown blood type	Does your hospital have SOPs that allow use of O positive for these patients? If so, are staff on all shifts familiar with the policies? Sample SOPs are available by request
Routine: Non-O Negative patient, unit nearing expiration	O Negative par level/inventory level may be set too high: consider gradually reducing O negative orders and monitoring
Routine: Non-O negative patient, clinical physician required O negative unit	Physician education is needed. We can help provide journal articles, AABB best practice guidelines, or educational presentations by request

Know Where Your Os Go

O negative audits are a great way to better understand utilization patterns and identify potential ways to reduce O negative rates

- **Low O negative expiration rates do not tell the whole story**
  - Short-dated O negative units that are routinely transfused to non-O negative patients to avoid expiration are an important source of wastage—and a potential opportunity to reduce O negative utilization

Cycle of Overutilization



Optimizing O-negative RBC utilization using a data-driven approach. Transfusion. 60:4. Apr 2020: 739-746.
Hirani R, Wong J, Diaz P, et al. A national review of the clinical use of group O D– red blood cell units. Transfusion 2017;57:1254-61.

Right Type Focus

Transfusing type-specific CEK antigen-negative units to patients with sickle cell disease is best practice, and helps to reduce reliance on O negative blood[1]

- Less than 5% of sickle cell patients are estimated to be O negative
- Maintain an inventory of CEK-negative Rh-positive RBCs
- When screening for CEK negative units in house, **screen A negative/B negative and Rh-positive units**
- When ordering CEK negative units from IRL, **order in advance whenever possible:**
  - Increases the likelihood of a type-specific match that meets the antigen-negative requirements.
  - Reduces the frequency of product substitutions, transfusion delays or fewer units than desired being available.

1. https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02.pdf

Efforts to Increase Type-Specific CEK Distributions

To reduce its reliance on O negative blood in meeting our hospital's sickle cell needs, the Red Cross has invested significantly in donor engagement and laboratory optimization.

Since launching its Sickle Cell Initiative in January 2021:

74% Growth ⇨ There has been 74% growth in our **donor base who identify as Black or African American**

~50% Growth ⇨ We have seen nearly 50% growth in **CEK- units collected from donors who are Black or African American**

14% More ⇨ We **distributed 14% more CEK negative units from donors who are Black or African American** in 2024 than we did in 2023

Start Smart

Does your blood bank have a policy defining when to use O positive RBCs during emergency transfusions in patients with unknown blood type?

- **O negative RBCs should be saved for O negative patients and in emergencies for women of childbearing potential when blood type is unknown.**[1,2]
- During emergencies when blood type is unknown, adult males and women beyond childbearing potential should be transfused with O positive RBCs and switched to type-specific as soon as possible.[1,2]
- Type specific units should be provided whenever possible.[2]

Choosing Wisely®
An initiative of the ABIM Foundation

5

Don't transfuse O negative blood except to O negative patients and in emergencies for women of child bearing potential with unknown blood group.

O negative blood units are in chronic short supply due in part to overutilization for patients who are not O negative. O negative red blood cells should be restricted to: (1) O negative patients; or (2) women of childbearing potential with unknown blood group who require emergency transfusion before blood group testing can be performed.

1. https://www.aabb.org/docs/default-source/default-document-library/resources/choosing-wisely-five-things-physicians-and-patients-should-question.pdf
2. https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02-revised.pdf
3. Dunbar NM, Yazer MH, for the BEST Collaborative. O– product transfusion, inventory management, and utilization during shortage: The OPTIMUS study. Transfusion 2018;58: 1348-55.

What if the patient already has anti-D?

- Risk of non-ABO hemolytic reaction after an emergency uncrossmatched transfusion is **very low**
- Non-ABO hemolytic reactions may occur **even with O negative red blood cells** (anti-Jka, anti-K, etc.)
- IgG anti-D causes ***extravascular*** hemolysis, which is usually **mild**

Study	Number of Recipients	Number of Uncrossmatched Erythrocyte Units Issued	Rate of Hemolysis	Rate of New Antibody Formation
Mulay, 2012[17]	1,407	4,144	1/1,407 (0.02%)	7/232* (3%)
Radkay, 2012[6]	218	1,065	1/218 (0.5%)	4/218 (1.8%)
Miraflor, 2011[15]	132	1,570	1/132 (0.8%)	1/132
Goodell, 2010[18]	262	1,002	1/262 (0.4%)	Not reported
Ball, 2009[19]	153	511	0	Not reported
Dutton, 2005[14]	161	581	0	1/161 (0.6%)
Unkle, 1991[20]	135	Not reported	0	3/135 (2.2%)
Lefebre, 1987[21]	133	537	0	Not reported
Schwab, 1986[22]	99	410	0	Not reported
Gervin, 1984[23]	160	875	0	Not reported
Blumberg, 1978[24]	46	221	0	Not reported
Total	2,906	10,916	4/2,906 (0.1%)	16/878 (1.8%)

Incidence of hemolysis and alloimmunization after emergency-release uncrossmatched blood transfusion in civilian centers.
* Denominator includes only patients with a subsequent antibody screen available.

- Goodell PP, et al. .Risk of hemolytic transfusion reactions following emergency-release RBC transfusion. Am J Clin Pathol 2010;134:202-6
- https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02.pdf
- Boisen, ML, et al. Pretransfusion testing and transfusion of uncrossmatched erythrocytes. Anesthesiology.2015;122(1):191-195.

What about Females of Childbearing Potential?

Addressing concerns for potential risk of Hemolytic Disease of the Fetus and Newborn (HDFN) with future pregnancy

The risk of fatal HDFN after Rh positive transfusion in an RhD negative female of childbearing potential has been estimated to be ~0.3%

Developing policies to follow up and educate Rh negative females of childbearing potential after Rh positive transfusions can help to ensure proper care for future pregnancies

- Yazer MH,, et al. It is time to reconsider the risks of transfusing RhD negative females of childbearing potential with RhD positive red blood cells in bleeding emergencies. Transfusion. 2019;59:3794–9.
- Malone JR. Ethical considerations in the use of RhD-positive blood products in trauma. Transfusion. 2024;64:S4–S1.

Safe Choices

Evidence suggests that administering Rh positive blood or whole blood in emergencies is safe.

- **Alloimmunization is a risk with any transfusion, even with O negative blood**
- Most patients are Rh positive (85% and increasing)
- In the 15% of patients who are Rh neg, risk of anti-D alloimmunization after Rh pos transfusion is 21-26%[1]
  - Risk is even lower (less than 10%) in immunocompromised marrow and solid organ transplant patients[1]
  - Overall risk of anti-D alloimmunization when using O positive for emergencies is between 3% and 6%, as most patients are Rh positive[1]
- Recent studies suggest exposure to greater number of Rh-positive units does not increase alloimmunization risk[2]

1. https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02.pdf
2. Seheult JN, et al. Rate of D-alloimmunization in trauma does not depend on the number of RhD-positive units transfused: The BEST collaborative study. Transfusion. 2022;62:S135-S192.

Safe Choices

Establish a policy for follow up on Rh negative patients that received a Rh-positive transfusion.

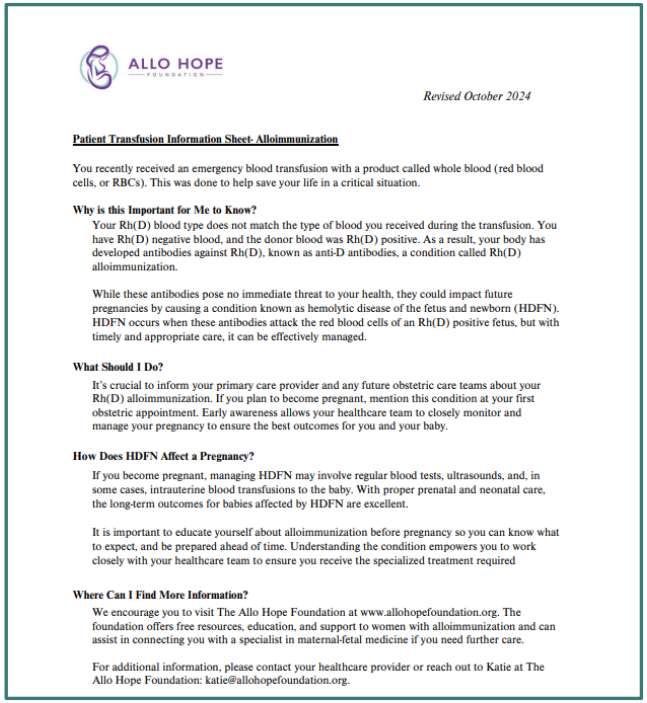
Standard Operating Procedures Include:

When to consider *administration of RhIg prophylaxis*

- Hospital practices vary, must consider potential benefits vs. risk of hemolysis with large doses of RhIg

Plan for follow up patient testing to evaluate for anti-D alloimmunization

- Notification and education for patients who become alloimmunized
- For females of childbearing potential, patient education letters are available from Allo Hope Foundation



ALLO HOPE FOUNDATION

Revised October 2024

Patient Transfusion Information Sheet- Alloimmunization

You recently received an emergency blood transfusion with a product called whole blood (red blood cells, or RBCs). This was done to help save your life in a critical situation.

Why is this Important for Me to Know?

Your Rh(D) blood type does not match the type of blood you received during the transfusion. You have Rh(D) negative blood, and the donor blood was Rh(D) positive. As a result, your body has developed antibodies against Rh(D), known as anti-D antibodies, a condition called Rh(D) alloimmunization.

While these antibodies pose no immediate threat to your health, they could impact future pregnancies by causing a condition known as hemolytic disease of the fetus and newborn (HDFN). HDFN occurs when these antibodies attack the red blood cells of an Rh(D) positive fetus, but with timely and appropriate care, it can be effectively managed.

What Should I Do?

It's crucial to inform your primary care provider and any future obstetric care teams about your Rh(D) alloimmunization. If you plan to become pregnant, mention this condition at your first obstetric appointment. Early awareness allows your healthcare team to closely monitor and manage your pregnancy to ensure the best outcomes for you and your baby.

How Does HDFN Affect a Pregnancy?

If you become pregnant, managing HDFN may involve regular blood tests, ultrasounds, and, in some cases, intrauterine blood transfusions to the baby. With proper prenatal and neonatal care, the long-term outcomes for babies affected by HDFN are excellent.

It is important to educate yourself about alloimmunization before pregnancy so you can know what to expect, and be prepared ahead of time. Understanding the condition empowers you to work closely with your healthcare team to ensure you receive the specialized treatment required

Where Can I Find More Information?

We encourage you to visit The Allo Hope Foundation at www.allohopefoundation.org. The foundation offers free resources, education, and support to women with alloimmunization and can assist in connecting you with a specialist in maternal-fetal medicine if you need further care.

For additional information, please contact your healthcare provider or reach out to Katie at The Allo Hope Foundation: katie@allohopefoundation.org.

- https://allohopefoundation.org/learn/transfusion-medicine/
- Lu W, et al. Rh immune globulin immunoprophylaxis after RhD-positive red cell exposure in RhD-negative patients via transfusion: A survey of practices. Transfusion. 2024; 64(5):839-845.

Switch Sooner

Does your blood bank have a policy describing when to switch O negative patients to Rh positive RBCs to avoid depleting group O negative inventory?

- During an emergency, a single patient can rapidly deplete O negative RBC inventory, potentially jeopardizing O negative availability for your other O negative patients and O negative patients at other hospitals near you
- You can help protect the O negative blood supply by implementing policies describing when to switch patients to Rh pos and ensuring your blood bank team is familiar with them
- Having clear policies in place before an emergency happens can help to prevent a ***critically low O negative inventory***

Does your blood bank have a policy to expedite sample collection to quickly switch patients to type-specific blood upon completion of pretransfusion testing?

1. AABB Recommendations for Appropriate Group O Use: (https://www.aabb.org/docs/default-source/default-document-library/resources/association-bulletins/ab19-02.pdf)

Facts in Review

- O negative population in the U.S is 6.9% and declining
- Fewer people donate blood today than in the past
- An estimated 85% of all hospital patients are Rh positive
- Most trauma patients are male
- Less than 5% of patients with Sickle Cell disease are O negative
- As most patients are Rh positive, the overall risk of anti-D alloimmunization is 3 – 6% when using O positive for emergencies

Together this data support a reduced reliance on O negative blood and safely using of O positive blood for emergency transfusions.

Conclusion

- A changing donor base and increasing hospital demand have resulted in a **chronic short supply of O negative** red blood cells. The current trajectory is unsustainable.

- Empower Group O Care is designed to **strengthen blood supply resiliency by advancing sustainable stewardship practices**.
- **Working together, we can stabilize the O negative blood supply!**

Thank you

American Red Cross

Empower Group O Care
Ongoing Education

Continued outreach and support will be provided through:

- Red Cross Medical Office
- Hospital Newsletter
- SUCCESS® Continuing Education
- Business Reviews
- Plus Online
- **RedCrossBlood.org**

Next up on SUCCESS®

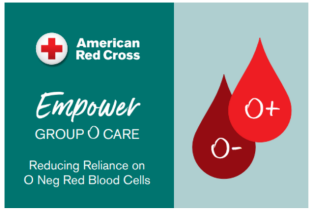
May 15, 1:00pm CST

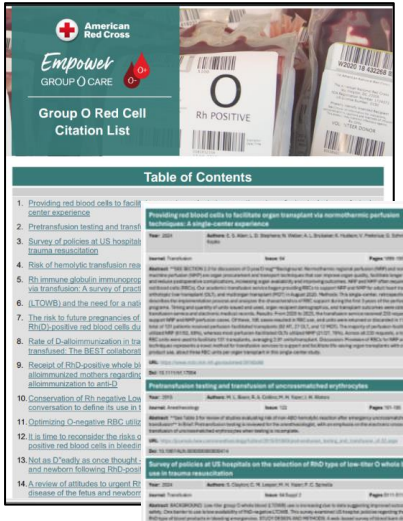
***Empower* Group O Care:**
Gaining Insights Through Group O Auditing

American Red Cross | SUCCESS®

Empower Group O Care Resources

- Educational Slide Decks
  - Staff Meetings
  - Grand Rounds
  - Transfusion Committee Meetings
- Citation List & Supporting Literature
- Sample SOPs
- Audit and Utilization Toolkit
- References/referrals
- O Negative Product Stewardship Fact/Tip Sheets





Empower Group O Care RedCrossBlood.org

Hospital Partner Resource Guide (HPRG)

To best serve our hospital partners, the following comprehensive resource guide is available to facilitate access to all Red Cross service areas. All product and service information ranging from ordering and invoice payment to reference lab and medical consultation is available along with essential points of contact ready to address your every need.

HPRG Quick Links

- Service Delivery
- Therapeutic and Cellular Solutions Resources
- Product Handling and Shipping
- License and Certificates
- Products and Transfusion Practices
- Billing, Invoicing and Reimbursement
- Empower Group O Care
- Contacts
- Laboratory Resources
- Not finding what you need? Click here for help

Empower Group O Care

Empower Group O Care is designed to strengthen blood supply resiliency by advancing sustainable stewardship practices. Responsible use of O negative and O positive blood is required to ensure these vital resources are readily available for patients when needed.

These resources are available to enable hospital Group O education.

Presentations

Coming Soon!

- **Start Smart & Switch Sooner Presentation**
- **Know Where Your Os Go Presentation**
- **Safe Choices Presentation**
- **Right Type Focus Presentation**

References

- **Group O Red Cell Citation List and Overview**
- **AABB Bulletin**
- **Allo Hope Foundation - Alloimmunization & HDFN Resources and Information**
- **AABB Weekly Report**

Note: Sample policies and procedures are available upon request. Contact your Red Cross Medical Director for more information.

Hospital Resources

- **Empower Group O Care Poster**
- **Group O Stewardship Tip 1: Start Smart**
- **Group O Stewardship Tip 2: Switch Sooner**
- **Group O Stewardship Tip 3: Know Where Your Os Go**
- **Group O Stewardship Tip 4: Safe Choices**
- **Group O Stewardship Tip 5: Right Type Focus**

News and Announcements

Announcing the Launch of *Empower* Group O Care

The Red Cross is thrilled to introduce ***Empower* Group O Care**, an innovative initiative set to tackle one of the most pressing issues in transfusion medicine today – ensuring a sustainable and reliable supply of O negative Red Blood Cells. As an industry leader with extensive expertise in transfusion medicine, we are championing responsible stewardship practices of both O negative and O positive blood through ongoing educational events and supportive hospital resources, including toolkits and reference documents.

***Empower* Group O Care** underscores our collective obligation to act now to ensure life-saving blood products are consistently available to those who need them most. Join us as we work together to better steward this vital blood supply and support improved patient outcomes.

LEARN MORE

O Negative Tip: Start Smart for Organ Transplant

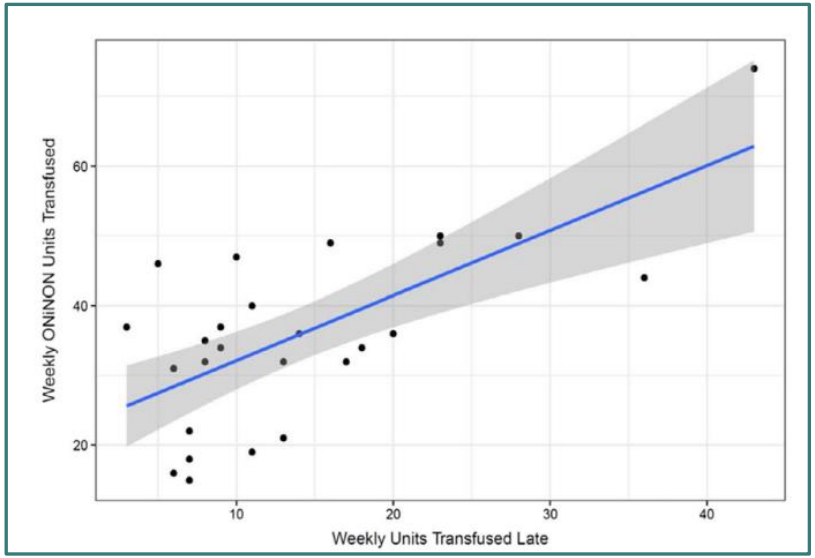
- **Immunosuppressed Rh negative transplant patients have a reduced risk of alloimmunization after Rh positive transfusion**[1,2]
  - A recent study of liver transplant patients recommends consideration of **early transfusion of Rh positive units during liver transplantation**, especially in males and females beyond childbearing potential[2]
  - Normothermic regional perfusion (NRP) and normothermic machine perfusion (NMP) are techniques used in solid organ transplant that involve perfusing an organ with RBCs before it is transplanted into the recipient.
    - A recent study by Allen et al.[3] describes an organ perfusion program that provides up to **5 O positive RBCs per organ**. Organs are flushed extensively before transplant, and no significant quantities of perfused RBCs remain in the organ

1. AABB bulletin 19-02: Association Bulletin #19-02 - Recommendations on the Use of Group O Red Blood Cells
2. Juhl; F. Braun; C. Brockmann; I. Muslolik; T. Bunge-Phillipowski; K. Luckner; S. Gorg; M. Ziemann, RhD-negative red blood cells can be saved during liver transplantation in RhD-negative patients due to low risk of alloimmunization against RhD - Juhl - 2025 - Transfusion - Wiley Online Library
3. E. S. Allen; L. D. Stephens; N. Weber; A. L. Brubaker; K. Hudson; V. Pretorius; G. Schnickel; P. M. Kopko , Transfusion 2024 . 2024 Oct;64(10):1899-1908. doi: 10.1111/trf.17994. Epub 2024 Aug 24. Providing red blood cells to facilitate organ transplant via normothermic perfusion techniques: A single-center experience - PubMed

Additional Optimus Study Findings

The study found that shorter dated O negative units were more likely to be given to non-O negative recipients.

- Number of units transfused later in shelf-life correlated with inappropriate O negative RBC usage (O negative into Non-O negative patients = ONiNON)
- Gradually reducing O negative inventory levels successfully reduced late and inappropriate O negative transfusions
- O negative patients were not impacted
  - No increase in ad-hoc O negative orders



O Negative Transfers

Short date transfers can be another source of wastage.

- Transferring short-dated units to a hospital partner that is more likely to be able to use them may be a good stewardship practice *in some cases*
- High transfer rates may also contribute to high wastage rates at the transfer partner if they can't be used for O negative patients
- Transfers should not be considered a substitute for right-sizing O negative inventory

Expand your audit to include O negative transfers and whether they were transfused to O negative patients at the receiving hospital

Safe Choices

- In emergencies, the risk of an acute non-ABO hemolytic transfusion reaction from an uncrossmatched transfusion is **less than 1% and is usually mild**[1]
- In Rh negative females of childbearing potential, the **future risk of fatal HDFN after Rh positive transfusion has been estimated to be very low** (~0.3%)[2,3]
- Developing **policies to follow up and educate Rh negative females of childbearing potential after Rh positive transfusions** may help to mitigate the risk of future severe outcomes from HDFN[4,5]

Ensure **policies** for follow up of Rh-negative patients after Rh positive transfusions:

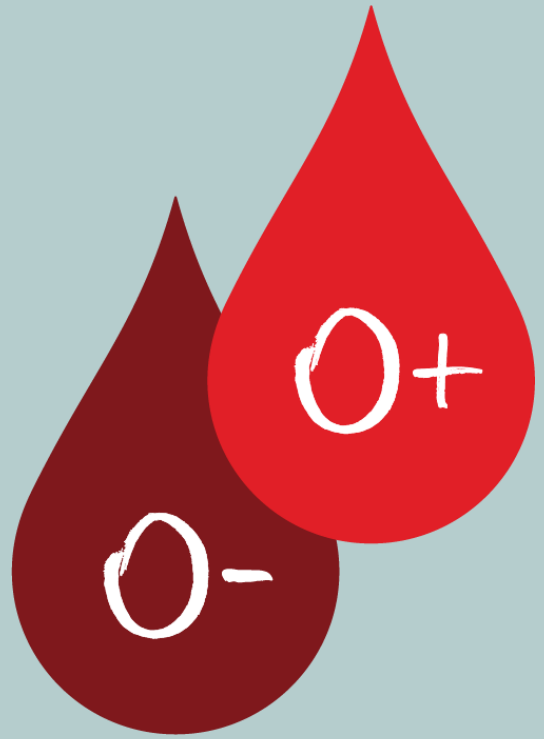
- Evaluate potential situations when RhIg prophylaxis might be considered
- Plan for repeat antibody screen to evaluate for anti-D alloimmunization
- Provide education and resources for patients who become alloimmunized

1. Selleng K, et al. Emergency transfusion of patients with unknown blood type with blood group O Rhesus D positive red blood cell concentrates: a prospective, single-centre, observational study. Lancet Haematol. 2017 May;4(5):e218-e224.
2. Yazer MH,, et al. It is time to reconsider the risks of transfusing RhD negative females of childbearing potential with RhD positive red blood cells in bleeding emergencies. Transfusion. 2019;59:3794–9.
3. Malone JR. Ethical considerations in the use of RhD-positive blood products in trauma. Transfusion. 2024;64:S4–S1.
4. Clayton S, et al. Survey of policies at US hospitals on the selection of RhD type of low-titer O whole blood for use in trauma resuscitation. Transfusion. 2024;64:S111–S118.
5. https://allohopefoundation.org/learn/transfusion-medicine/

American Red Cross

Empower GROUP O CARE

Designed to **strengthen blood supply resiliency by advancing sustainable stewardship practices**. Through education and awareness, we promote responsible use of O-negative and O-positive blood to ensure these vital resources are readily available for patients when needed.



ARC Efforts to Increase Type-Specific CEK Distributions

Complementing the Sickle Cell Initiative, the Red Cross is actively investing in operational improvements to **increase the volume of donor antigen screening for all ABO types**

Our current and ongoing work will **increase the availability of right type antigen negative units, reduce our reliance on O negative blood, and improve overall response time**