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Quality Review of Irradiated Cellular Blood Product Orders
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Background

Transfusion-associated graft-versus-host disease (TA-GVHD) is an immunological response between a donor’s transfused T cells and the recipient’s immune defense. The risk of TA-GVHD increases with relatively large transfusions of lymphocytes (e.g., transfusion in infants or granulocyte transfusion) or immunocompromised individuals. The risk of TA-GVHD is mitigated by irradiating cellular blood components to prevent donor T lymphocyte proliferation.

Irradiation of cellular blood components is managed differently amongst institutions. Factors to consider in the irradiation process include technologist time. Technologists prepare and perform irradiation of the cellular blood products. This can be a labor intensive process. Cost is another factor that includes the cost of the irradiation indicators that are placed on the units and labor in providing this service. Irradiation also shortens the shelf life of the cellular blood component to 28 days. If the shelf life was more than 28 days then irradiation does not extend the shelf life to 28 days (e.g. shelf life 14 days, post-irradiation remains 14 days). At Thomas Jefferson University Hospital, the Blood Bank irradiates blood products only upon request, then reviews the initial orders to determine if irradiation is indeed indicated. The reason whether irradiation is appropriate is determined by having medical coverage review the requests.

Objectives

Our goal is to educate house staff on the indications for irradiated blood products. We hope to reduce the number of inappropriate irradiation orders to less than 50% of the total orders for irradiated blood products and to be followed up over time.

Review of Inappropriate Orders

Irradiated blood product orders flagged for medical coverage review from July 2016 to March 2017 revealed 34 of the 55 orders were inappropriate. For each incorrect order, clinician name, clinician service, hospital unit, transfusion indications, and reason for irradiation were recorded. The inappropriate orders were submitted by 31 clinicians (24 medicine residents, two anesthesia residents, two otolaryngology residents, two medicine nurse practitioners, and one attending physician). Three clinicians submitted two inappropriate irradiation orders. The clinicians ordered the irradiated cellular blood products because the patient had a history of cancer or was on immunosuppressive therapy.

Interventions to Decrease Inappropriate Orders

Two interventions were undertaken to decrease the number of inappropriate irradiation orders.

A polite and professional email was sent to the clinicians who submitted the inappropriate irradiation orders from July 2016 to March 2017. The email informed the clinicians that they submitted an inappropriate irradiation order, provided them with a table of irradiation blood product indications, and additional resources. This email was sent on February 27, 2017.

A pocket card was also created. The card contained a table of indications for irradiated cellular blood products and contact information for the Jefferson Blood Bank to encourage collaboration between house staff and the Blood Bank. The card will be distributed on June 13, 2017 to Internal Medicine house staff.

Discussion

Next Steps

• Dr. Julie Karp, Associate Director of the Thomas Jefferson University Blood Bank, will give an educational lecture to the Department of Medicine residents on blood products (including irradiated cellular blood products) on June 13, 2017
• Irradiated cellular blood product orders will be reviewed to determine if the number of inappropriate orders decrease over time.

Possible Further Interventions

• Email all Jefferson residents informing them of the indications for irradiated cellular blood products.
• Email Jefferson faculty informing them of the indications for irradiated cellular blood products.

Limitations

• Only the clinician who submitted the inappropriate irradiation order was contacted, not the entire care team.
• The preliminary post-intervention data may not be representative since residents gain experience during the year.
• Only one year of inappropriate orders were reviewed.

References


Acknowledgements

The authors would like to acknowledge the help of Dr. Julie Karp and Mary Harach for their help on this project.

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