EVALUATION OF C.T RATIO FOR 12 YEARS IN THE CHILDREN S HOSPITAL

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Today, excessive blood requests is a common concern in educational hospitals. This makes emergence of issues such as:

- the lack of proper distribution of blood products among different centers,
- increasing costs
- Increasing wastage
- and increasing the workload of the blood bank
C/T=Number of Cross-matched units /Number of Transfused units

The **C/T Ratio** Index used to examine the demand and correct blood consumption

Accordingly, the C/T ratio of more than 2.5 indicates that the blood transfusion conditions are undesirable, meaning that less than 40% of matched the blood is used. c/t ratio more than 5% indicates the need for pre-operative blood storage.

METHODS:

- cross-sectional descriptive-retrospective (2 studies)
- 1) during the first 10 years (2007-2017),
- the number of 176,696 blood transfusion requests in 10 years in all 19 sections of the hospital (internal, surgery, emergency, ICU and neonatal)
- 2) (C/T ratios) were calculated for each out patient and in patients in year 2018.
- C/T ratio less than 2.5 indicates a significant need for blood during surgery.
From 2007 to 2017 antibody screening performed for all request of the wards
<table>
<thead>
<tr>
<th>Series</th>
<th>Section</th>
<th>Total number of requests</th>
<th>Cancellated requests</th>
<th>Percentage of cancelled requests to total requests</th>
<th>Total Number of PCs used</th>
<th>Percentage of PCs- use- to total requests</th>
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<tbody>
<tr>
<td>1</td>
<td>Admitted emergency</td>
<td>5218</td>
<td>3800</td>
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<td>2</td>
<td>NICU</td>
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<td>691</td>
<td>55</td>
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<td>3</td>
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<td>43</td>
<td>16201</td>
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<td>1800</td>
<td>27</td>
<td>4894</td>
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<td>176696</td>
<td>40940</td>
<td>23</td>
<td>135756</td>
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</table>
COMPARISON: RBC USE & REQUEST & CANCEL

- Total number of request
- Cancelled of requests
- Total number of RBC used
RESULTS:

- **First study**
  - The highest requests were from surgery section II
  - The lowest requests were from NICU,
  - The most cancellations were for admitted emergency
  - Least cancellations were for the neurology section.
  - Antibody screening test performed for all requests
  - From, 40,940 (23%) requests were cancelled
  - 135,756 (77%) led to blood transfusion.
  - Neurology and infectious diseases sections had the highest blood consumption and the lowest cancellations, relative to the number of requests, 96% and 95% of the requests led to blood transfusion respectively.
  - Conversely, the highest cancellation rates and the lowest intake of blood, relative to the amount of requests, were for emergency section with only 27% of requests led to blood transfusion
SECOND STUDY

• In 2018, cross-match test performed for all 15,310 blood transfusion requests.

• 11462 requests (75%) resulted in transfusion
• 3848 requests (25%) led to cancellation.

• The average C / T Ratio calculated as 1.3.
• The highest rate was 1.6 reported in the September
• the lowest was 1.1 reported in December.
Total number of requests according to section

- Total... 28201
- Surgery II 21272
- Surgery(G)... 18427
- Intra-... 13978
- Hematology 12908
- PICU 12641
- Neonatal 11711
- EPICU 8214
- ICU 8201
- NICU 2 7092
- Nephrology... 6694
- Admitted... 5218
- Urology 5062
- NICU-OH 4220
- Infectious 3881
- Neurology 2807
- ICU-OH 2700
- Rheumatol... 2208
- NICU 1261

Cancelled of requests

- Cancelle... 73
- Admitted... 45
- NICU 43
- Surgery II 27
- Rheumatol... 27
- Nephrology... 26
- ICU 24
- Surgery(G)... 23
- Gastro... 20
- Intra-... 16
- EPICU 16
- Urology 14
- NICU-OH 14
- NICU 14
- ICU-OH 9
- Neonatal 8
- Hematol... 7
- Infectious 5
- Neurology 4
Percentage of RBC-use- to total requests

C/T Ratio According to the months in 2017
Discuss

✓ Considering that most usage of blood units is in the surgical ward, the Maximum Surgical Blood Ordering Schedule (MSBOS) pattern suggested.

✓ According to the amount of blood usage - reported in various surgical procedures - a specific guide, a pattern of blood transfusion requirements, for surgery was developed.

✓ So, the likelihood of blood need for any surgery calculated, using indicators.

✓ Thus, in selected surgical procedures, which normally do not require blood, they only perform Type &Screen.

✓ Request for cross match test is limited to those surgical procedures which, according to the indicators, are likely to have a high blood transfusion.

✓ Considering the high costs of blood preparation and storage, this study conducted to investigate and modify the request process and the rate of blood consumption in different sections of the Children's Medical Center hospital.

Conclusions

✓ This research shows that unfortunately there is still undesirable blood requests.
✓ By establishing a haemovigilance system for blood in Iran and observing the principles of proper blood transfusions, it is possible to reduce the amount of unnecessary requests, false shortage in the hospital's blood bank, tension on the blood bank and the blood wastages officials.
✓ Ndeed to:
  
  Periodic review of blood component usage and wastage
  Awareness and education among all doctors
  prepare Guideline for blood usage
  MSOBOS
  Regular audit
Thanks a lot
From your attention