Haemovigilance programme of India: Current scenario and Future perspectives

Prof. Neelam Marwaha
MD; FAMS; FISHTM.
Head, Dept. of Transfusion Medicine
Post graduate Institute of Medical Education & Research, Chandigarh

Chairperson, National Executive Committee
Haemovigilance Programme of India

TRANSMEDCON 2015, Kolkata
The journey so far

- The National Institute of Biologials (NIB) ensures quality of biologicals for use in the country.

- Indian Pharmacopoeia Commission (IPC) sets standards of drugs and established the Pharmacovigilance Programme of India.

- Resource allocation (technical, administrative and financial) was made for this programme.

- Haemovigilance Programme (HvPI) was planned jointly by IPC and NIB. The National Co-ordinating Centre of HvPI is at NIB.

- HvPI was launched on 10th December, 2012 in 90 Medical Colleges which were Adverse Drug Reaction monitoring centers of the PvPI.
The objectives

- Monitor Transfusion Reactions (Recipient Haemovigilance)
- Create awareness amongst health care professionals
- Generate evidence based recommendations
- Advise CDSCO for safety related regulatory decisions
- Communicate findings to all key stakeholders
- Create National and International Linkages
Roadmap of Haemovigilance Programme of India (Year 2012-2017)

- Initiation Phase 2012-13
- Expansion & Consolidation Phase 2013-15
- Expansion & Maintenance Phase 2015-17
Targets for the Haemovigilance programme
FY 2012-13 Initiation phase

- Develop systems and procedures for reporting
- Develop software
- Enroll participants
- Start Data Collection
- Zonal workshops for awareness
- Publication of HV Newsletter
Development of the Reporting System

- Standard Definitions of Adverse Transfusion Reactions (ISBT-WP on haemovigilance and IHN)
- Finalisation of Transfusion Reaction Reporting Form (TRRF)
- Development of indigeneous Software, (Haemo-Vigil)
- Ensure Security and Confidentiality of Data
- Conduct Awareness and Training CMEs/workshops
- Develop methods for Analysis of Data
Organisational structure for flow of reports

Nodal Officers – Haemovigilance

Depts. of Transfusion Medicine | Blood Banks

National Co-ordinating Centre - HvPI (National Institute of Biologicals)

Core group, National Advisory Committee | Signal Review Panel, Quality Panel, Training Panel

National Coordinating Centre-PvPI
Indian Pharmacopoeia commission

Central Drugs Standards Control Organisation

All stakeholders in blood transfusion services
Transfusion Reaction Reporting Form (TRRF) for Blood & Blood Products

For reporting of Transfusion Reactions by Healthcare Professionals

TRANFSUION REACTIONS REPORTING FORM FOR BLOOD & BLOOD PRODUCTS

A) PATIENT INFORMATION

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient initials</td>
<td>*</td>
</tr>
<tr>
<td>DOB/Age in years</td>
<td></td>
</tr>
<tr>
<td>Blood Group</td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td></td>
</tr>
<tr>
<td>Hospital Code No</td>
<td></td>
</tr>
<tr>
<td>Hospital Admission No</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>F M</td>
</tr>
<tr>
<td>Date &amp; Time of Transfusion</td>
<td></td>
</tr>
<tr>
<td>Date &amp; Time of reaction</td>
<td></td>
</tr>
<tr>
<td>Date &amp; Time of recovery</td>
<td></td>
</tr>
</tbody>
</table>

B) TRANSFUSION PRODUCT DETAILS

<table>
<thead>
<tr>
<th>Components</th>
<th>Select</th>
<th>Unit Number (transfused)</th>
<th>Expiry Date</th>
<th>Manufacturer</th>
<th>Batch Number</th>
<th>Indications</th>
<th>1st time / Repeat Transfusion (No. of Repeats)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Blood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Blood Cells</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelets Apheresis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelets Pooled RDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvent detergent (SD) Plasma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Products (Please Specify)</td>
<td>Manufacturer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C) NATURE OF ADVERSE REACTIONS

<table>
<thead>
<tr>
<th>Reactions</th>
<th>Please Tick (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Immunological Haemolysis due to ABO Incompatibility</td>
</tr>
<tr>
<td>2</td>
<td>Immunological Haemolysis due to other allo-antibodies</td>
</tr>
<tr>
<td>3</td>
<td>Non Immunological Haemolysis</td>
</tr>
<tr>
<td>4</td>
<td>Transfusion Transmitted Bacterial Infection</td>
</tr>
<tr>
<td>5</td>
<td>Anaphylaxis / Hypersensitivity</td>
</tr>
<tr>
<td>6</td>
<td>Transfusion Related Acute Lung Injury (TRALI)</td>
</tr>
<tr>
<td>7</td>
<td>Transfusion Transmitted Viral Infection (HBV)</td>
</tr>
<tr>
<td>8</td>
<td>Transfusion Transmitted Viral Infection (HCV)</td>
</tr>
<tr>
<td>9</td>
<td>Transfusion Transmitted Viral Infection (HIV-1/2)</td>
</tr>
<tr>
<td>10</td>
<td>Transfusion Transmitted Viral Infection, other (Specify)</td>
</tr>
<tr>
<td>11</td>
<td>Transfusion Transmitted Parasitic Infection (Malaria)</td>
</tr>
<tr>
<td>12</td>
<td>Transfusion Transmitted Parasitic infection, other (Specify)</td>
</tr>
<tr>
<td>13</td>
<td>Post Transfusion Purpura</td>
</tr>
<tr>
<td>14</td>
<td>Transfusion Associated Graft versus Host Disease (TAGvHD)</td>
</tr>
<tr>
<td>15</td>
<td>Febrile Non Haemolytic Reactions (FNHTR)</td>
</tr>
<tr>
<td>16</td>
<td>Transfusion Associated Dyspnea (TAD)</td>
</tr>
<tr>
<td>17</td>
<td>Transfusion Associated Circulatory Overload (TACO)</td>
</tr>
<tr>
<td>18</td>
<td>Other Reaction(s)</td>
</tr>
</tbody>
</table>

D) OUTCOMES OF THE ADVERSE REACTIONS

- Death following the adverse reactions
- Recovered
- Recovered with sequelae
- Permanently disabled
- Unknown

E) REPORTER

<table>
<thead>
<tr>
<th>Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name and professional Address</td>
<td></td>
</tr>
<tr>
<td>Pin Code</td>
<td></td>
</tr>
<tr>
<td>Tel No. (with STD code)</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
</tbody>
</table>

F) CAUSALITY ASSESSMENT

Date of this report (DD/MM/YYYY)
Publication of Haemovigilance Newsletter

Vol No. 1, Issue 1, January-June, 2013

The aim of the newsletter is to disseminate information on Haemovigilance Programme so as to create awareness amongst healthcare professionals & other stakeholders on safe Blood transfusion & Blood Product Administration practices.

This newsletter is also available at our website: http://www.nib.gov.in

Contents

- Launching of Haemovigilance Programme- India
- News on Haemovigilance Programme- India
- Objectives
- Core Group & Advisory Committee - Haemovigilance
- 1st Meeting of Advisory Committee held on 29th Nov, 2012
- 1st Meeting of Core Group

172 TRRs from AIIMS, Delhi

78 TRRs from Medanta, Gurgaon
Targets for the Haemovigilance programme
FY 2013-15  Expansion and consolidation

- Continue enrolment
- Awareness and Training of staff
- Continue Zonal Workshops
- Publication of Newsletter
- Application for membership of IHN
Slow but steady increase in reports

Transfusion Reaction Reports (TRR) by Medical Colleges under Haemovigilance Programme

At present there are 413 reports in the database submitted via Haemo-Vigil Software by 9 Centers under Haemovigilance

July-December 2013

July-December 2014

Ref; HvPI Newsletters
Reports in the database since onset

Number of reports
## Haemovigilance CMEs 2013-14

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of Medical College</th>
<th>Date of CME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CMC Vellore, Tamilnadu</td>
<td>20th April 2013</td>
</tr>
<tr>
<td>2</td>
<td>AIIMS, New Delhi</td>
<td>7th May 2013</td>
</tr>
<tr>
<td>3</td>
<td>GMC, Jammu</td>
<td>18th May 2013</td>
</tr>
<tr>
<td>4</td>
<td>Goa medical college &amp; hospital</td>
<td>29th June 2013</td>
</tr>
<tr>
<td>5</td>
<td>PGIMER, Chandigarh</td>
<td>20th July 2013</td>
</tr>
<tr>
<td>6</td>
<td>NIMHANS, Bengaluru</td>
<td>28th September 2013</td>
</tr>
<tr>
<td>7</td>
<td>NRHM, Srinagar, J&amp;K</td>
<td>5th October 2013</td>
</tr>
<tr>
<td>8</td>
<td>AIMS, Kochi, Kerala</td>
<td>9th November 2013</td>
</tr>
<tr>
<td>9</td>
<td>PGIMER, Chandigarh</td>
<td>14th December 2013</td>
</tr>
<tr>
<td>10</td>
<td>CDSCO, Hyderabad</td>
<td>23rd January 2014</td>
</tr>
<tr>
<td>11</td>
<td>CDSCO, Dehradun, Uttarakhand</td>
<td>28th March 2014</td>
</tr>
</tbody>
</table>
# Haemovigilance CMEs 2014-15

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of Medical College</th>
<th>Date of CME</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>PGIMER &amp; GMC, Chandigarh</td>
<td>26&lt;sup&gt;th&lt;/sup&gt; April 2014</td>
</tr>
<tr>
<td>13</td>
<td>PGIMER, Chandigarh &amp; RPGMC, Tanda, HP</td>
<td>16&lt;sup&gt;th&lt;/sup&gt; May 2014</td>
</tr>
<tr>
<td>14</td>
<td>NRHM, Leh, J&amp;K</td>
<td>12&lt;sup&gt;th&lt;/sup&gt; June 2014</td>
</tr>
<tr>
<td>15</td>
<td>Science City, Kolkata</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; July 2014</td>
</tr>
<tr>
<td>16</td>
<td>BMHRC Bhopal</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; August 2014</td>
</tr>
<tr>
<td>17</td>
<td>GMC Patiala</td>
<td>16&lt;sup&gt;th&lt;/sup&gt; October 2014</td>
</tr>
<tr>
<td>18</td>
<td>National Institute of Biologicals, NOIDA,</td>
<td>28&lt;sup&gt;th&lt;/sup&gt; November, 2014</td>
</tr>
<tr>
<td>19</td>
<td>Punjab Institute of medical Sciences, Jalandhar</td>
<td>19&lt;sup&gt;th&lt;/sup&gt; December, 2014</td>
</tr>
<tr>
<td>20</td>
<td>Sri Ramachandra Institute of Medical Sciences, Chennai</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; February, 2015</td>
</tr>
</tbody>
</table>
State-wise centers enrolled in HvPI

- Total numbers-180

- Andhra Pradesh-14
- Assam-2
- Chandigarh-2
- Delhi-13
- Goa-5
- Gujarat-8
- Haryana-4
- Jammu & Kashmir-1
- Jharkhand-1
- Karnataka-27
- Kerala-9
- West Bengal-10
- Madhya Pradesh-20

- Maharashtra-13
- Orissa-3
- Punjab-6
- Rajasthan-3
- Sikkim-1
- Tamil Nadu-11
- Tripura-2
- Uttar Pradesh-12
- Uttarakhand-6
- Puducherry-3
- Bihar-1
- Manipur-1
User guidelines and manuals

Information about the programme, definitions, formats, responsibilities, confidentiality

Information about the procedure for entry and submission of HV data

Information to the participants, SOPs
Membership of International Haemovigilance Network

- Application for membership was submitted in 2014

- In March 27-28, 2015 representatives of HV Programme India were invited to participate in a webinar at the General Assembly and Research Strategy meet of IHN in Washington

- In September 2015, IHN accepted India’s application for membership and gave final approval in November the same year

- In November 2015, international experts from IHN have agreed to come to India for discussions on strengthening the programme further
What does our data tell us at present?
Number and types of reactions reported (Feb to Nov 2013)

No. of Reactions

Type of Adverse Reactions

FNHTR: 364
Allergic reactions: 167
Anaphylaxis/hypersensitivity: 59
HTR (Non-immune): 18
HTR (Immunological non-ABO): 17
TAD: 9
TTBI: 9
HTR (ABO Incompatibility): 7
TACO: 5
TA-GvHD: 1
Hypotension: 5
Others (Non-Specified): 74
Some preliminary observations

- FNHTRs (49.7%) and allergic reactions (22.8%) were the most frequently reported transfusion reactions.

- Out of 42 HTRs, 18 (42.8%) were due to non-immune causes, 17 (40.4%) were due to non-ABO allo-antibodies and 7 (16.6%) due to ABO mismatch.

- Not a single case of TRALI has been reported amongst these transfusion reactions.
  - Under-diagnosis and under-reporting
  - More than 90% blood donors in India are males.

- ‘Other’ reactions reported were mild FNHTRs, chills, mild breathlessness, pain at infusion site, abdominal pain, headache.
Analysis of Transfusion Reaction Reports
Based on 1728 reactions reported to HvPI till 16th December, 2014

- The transfusion reactions as reported in the TRRF based on definitions of the Working Party on Haemovigilance of the International Society of Blood Transfusion (as adopted June, 2013) were analysed with regard to following parameters:

  - type of transfusion reaction
  - causality assessment
  - type of blood components transfused
  - first time or repeat transfusion
  - clinical diagnosis of the patient, age and gender and
  - patient outcome after the transfusion reaction.
## Distribution of transfusion reactions

<table>
<thead>
<tr>
<th>Type of reactions</th>
<th>Total cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaphylaxis / Hypersensitivity</td>
<td>162</td>
<td>9.38</td>
</tr>
<tr>
<td>FNHTR</td>
<td>729</td>
<td>42.19</td>
</tr>
<tr>
<td>Immune hemolysis due to ABO incompatibility</td>
<td>11</td>
<td>0.64</td>
</tr>
<tr>
<td>Immune hemolysis due to other alloantibodies</td>
<td>29</td>
<td>1.68</td>
</tr>
<tr>
<td>Non-immune hemolysis</td>
<td>29</td>
<td>1.68</td>
</tr>
<tr>
<td>Other reactions</td>
<td>699</td>
<td>40.45</td>
</tr>
<tr>
<td>PTP</td>
<td>10</td>
<td>0.58</td>
</tr>
<tr>
<td>TACO</td>
<td>8</td>
<td>0.46</td>
</tr>
<tr>
<td>TAD</td>
<td>29</td>
<td>1.68</td>
</tr>
<tr>
<td>TAGvHD</td>
<td>1</td>
<td>0.06</td>
</tr>
<tr>
<td>TRALI</td>
<td>4</td>
<td>0.23</td>
</tr>
<tr>
<td>TT Malaria</td>
<td>1</td>
<td>0.06</td>
</tr>
<tr>
<td>TT Bacterial infection</td>
<td>16</td>
<td>0.93</td>
</tr>
</tbody>
</table>
Problems with data

**Immunological Haemolysis due to ABO incompatibility**
11 reactions; ‘WBIT’ (4), grouping error (1), bag labeling error (1). Outcome ‘unknown’ (3).

**Immunological haemolysis due to other alloantibodies**
29 reactions, 15 on regular tr. Alloantibodies reported in 3 patients only (anti-Jka, anti-E and anti-Jkb).

**Non-immunological haemolysis**
29 reactions, in 5 reactions, handling and storage errors were documented

**Incomplete data for validation**

**Transfusion transmitted bacterial infection**
Reported in 16 patients, in 7 cases, the culture from the blood bag was positive
Review and revision of the TRRF

- Data validation is an essential component of haemovigilance
- It includes assessment of TRRs against standard definitions
- The one page TRRF introduced initially for purposes of simplicity has been found to be inadequate for data validation
- The TRRF has been revised to incorporate relevant clinical symptoms and signs and lab investigations
- Zonal workshops are planned early in 2016 for personnel from haemovigilance participating centres to create awareness about the revised TRRF
Targets for the Haemovigilance programme
FY 2015-17

- Identify gaps and address appropriately
  - Reasons for not reporting (questionnaire already circulated)
  - Review and improve quality of data
- Assess feasibility of donor vigilance
- Feasibility of Rapid alerts and Near Miss events
- Epidemiological surveillance for TTIs
- Publication of the Haemovigilance Report with recommendations
Steps towards Donor Vigilance

- National Blood Donor Vigilance programme was launched from Kolkata during a CME organised at Science City on 14th June 2015

- The donor complication reports will be generated as per standard definitions agreed upon by ISBT-WP Haemovigilance, IHN and AABB (2014)

- Donor complication reporting form and guidance document are under final stages of preparation
Constraints identified

- Fear of punitive action
- Perception of additional work and responsibility
- Staff shortage, frequent transfers
- Sharing workload of other laboratory services
- Lack of computers and internet access
- No immediate benefit perceived for HV reporters and patients
# Achievements till date

## FY-2012-13
- Develop systems and procedures
- Develop software
- Enroll participants
- Start Data Collection
- Zonal workshops for awareness
- Publication of HV Newsletter

## FY 2013-15
- Continue enrolment
- Training of staff
- Continue Zonal Workshops
- Publication of Newsletter
- Application for membership of IHN

## FY 2015-17
- HV report
- Identify gaps and address them
- Assess feasibility of donor vigilance
- Rapid alerts, near miss
- Epidemiological surveillance - TTIs
WHO checklist for National Haemovigilance Systems

Leadership and Governance

- Haemovigilance as an element of the national blood policy and plan, and legislative and regulatory framework
- Haemovigilance advisory committee(s)
- Adequate human and financial resources
- Standards and definitions
- Confidential and non-punitive system
- Traceability of blood and blood products from donors to patients and vice versa
- Quality system throughout the transfusion chain
- Corrective and preventive action

Organization and Coordination

- Identification of stakeholders and responsible organizations and institutions
- Organizational arrangements for the haemovigilance system
- Coordinated links with organizations and institutions involved in the system
- Defined roles and responsibilities of all stakeholders
- Haemovigilance education and training for all health-care staff
- Monitoring, reporting, investigation and analysis of adverse events, with recommendations for safety and quality improvement
## WHO checklist for National Haemovigilance Systems

### Haemovigilance in the donation and provision of blood and blood products

- **Donor haemovigilance:** recognition, clinical management, monitoring, reporting, investigation and analysis of adverse events associated with donation
- **Policies, guidelines, protocols and standard operating procedures for all processes**
- **Reporting of errors and deviations associated with these processes**
- **Post-donation information and look-back**
- **Liaison between blood transfusions services and hospital blood banks, transfusion committees and clinical services**

### Haemovigilance in clinical transfusion

- **Patient haemovigilance:** recognition, clinical management, monitoring, reporting, investigation and analysis of adverse events associated with transfusion
- **Clinical guidelines, hospital protocols, standard operating procedures, patient identification and sample labelling**
- **Hospital transfusion committees**
- **Response to recall and look-back notification**
- **Coordination between hospital departments and services, and liaison with blood transfusion services**
A stepwise approach is recommended

Scope
Start with recipient HV -TRs, later errors and near miss
Move on to donors, products and processes

Participation
Phase out the enrolment of hospitals
Start with medical institutions, regional blood centers
Reach out to others

Regular review
Assess gaps, review the programme elements
Further plan

- Launch of dedicated website for HvPI
  - Public domain
  - Restricted domain
- Implementation of revised TRRF
- State Working Groups on Haemovigilance
- Appreciation certificates for participants
- Publishing the annual haemovigilance report
- Making use of HV data for specific recommendations
- Sharing information with international experts
To conclude

- Haemovigilance system was established under the broad ambit of Pharmacovigilance Programme
- Advantages of availability of expertise, resources and organisational structure
- Reporting was initially limited to transfusion reactions, now the scope is being widened to include donor complications
- Internationally accepted definitions - ISBT WP (HV), IHN are adopted
- Reporting formats have been revised to capture more meaningful data
- Data validation is ongoing and expert opinion has been sought from IHN
- 206 centres are enrolled, 2296 TRRs are captured in the national database
- Concurrent review based approach on user feedback
“Do not figure out big plans at first, but begin slowly, feel your ground and proceed up and up.”

Swami Vivekanand
Thank you for your kind attention