Commonwealth of Massachusetts
Department of Public Health

Helping People Lead Healthy Lives In Healthy Communities

Blood Safety and Surveillance

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Discussion Topics

- Making a case for hemovigilance (HV) through the use of NHSN
- The Massachusetts' experience
  - What does HV look like?
  - How is NHSN HV data being used?
- Suggestions for promoting HV through NHSN in other jurisdictions

Making a Case for Hemovigilance

- Hemovigilance around the world compared to the US
- TRALI story/SHOT (UK)
- MAC and HV subcommittee lobbied MDPH/DHCSQ
- TT-Babesiosis in MA
- NHSN used universally already for patient safety/HAI
- Window on area not well-served (in MA and US)
- Blood bankers and transfusion staff need and want benchmarking data
- Long term-could detect emerging bloodborne pathogens
- Tool to assess pathogen reduction technology as comes into use, and pathogens that might escape it

What Does Hemovigilance in MA Look Like?

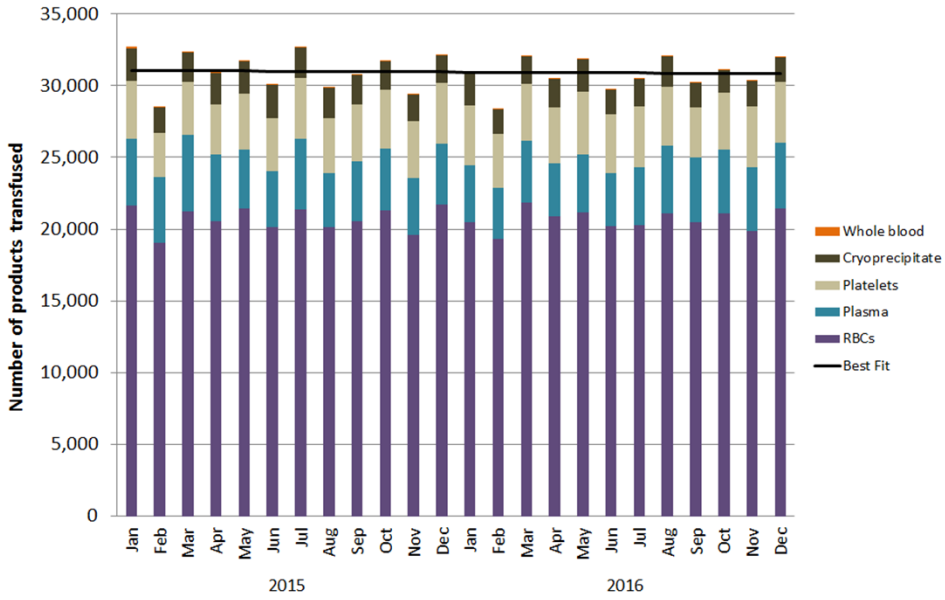
- Data collected through NHSN Hemovigilance Module
  - Secure, web-based platform
  - MDPH has access to all data entered

- Data elements collected in NHSN Include
  - Annual Facility Survey (Hospital characteristics, etc.)
  - Monthly Denominator Data (Products transfused and discarded)
  - Adverse Reaction Reports (12 Defined Types with inclusion criteria)

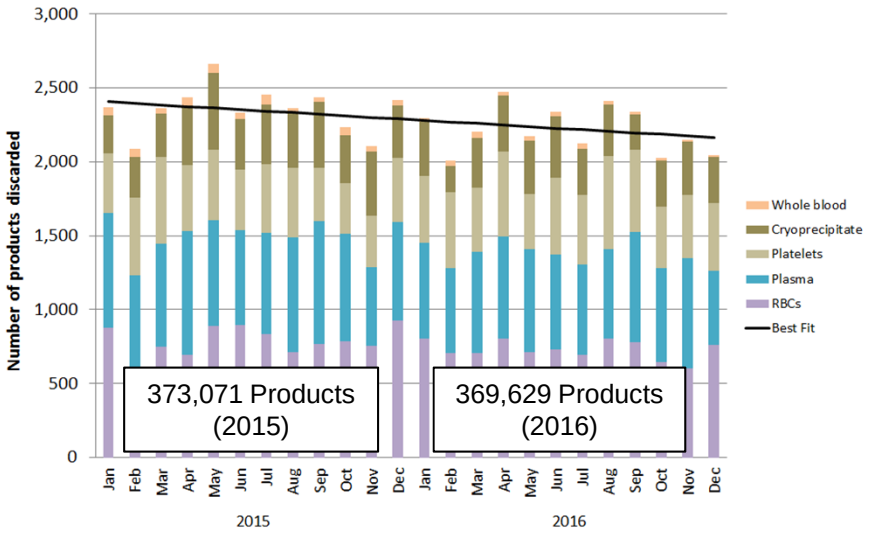
- Statewide and Facility-Specific Reports Generated Annually
  - Monthly Internal Quality Reporting

Hemovigilance in MA

Transfusion Volume



Volume of Discarded Products



Hemovigilance in MA

Transfusion Volume by Volume Group and Product Type, 2015 & 2016

Group	Product	2015 Volume Transfused	2016 Volume Transfused	Δ	% Δ
<2,000 products annually	RBCs	27,840	31,297	3,457	12.4%
	Platelets	1,737	1,979	242	13.9%
	Plasma	2,925	3,062	137	4.7%
	Cryoprecipitate	78	163	85	109.0%
	Whole blood	82	294	212	258.5%
2,000 - 7,999 products annually	RBCs	76,428	69,261	-7,167	-9.4%
	Platelets	7,140	7,324	184	2.6%
	Plasma	12,018	10,484	-1,534	-12.8%
	Cryoprecipitate	913	1,316	403	44.1%
	Whole blood	588	30	-558	-94.9%
>8,000 products annually	RBCs	144,541	147,578	3,037	2.1%
	Platelets	37,410	39,173	1,763	4.7%
	Plasma	37,515	36,526	-989	-2.6%
	Cryoprecipitate	23,837	21,131	-2,706	-11.4%
	Whole blood	19	11	-8	-42.1%
All facilities	RBCs	248,809	248,136	-673	-0.3%
	Platelets	46,287	48,476	2,189	4.7%
	Plasma	52,458	50,072	-2,386	-4.5%
	Cryoprecipitate	24,828	22,610	-2,218	-8.9%
	Whole blood	689	335	-354	-51.4%

Discard Ratios by Product Type 2016

Group	Product	Volume Transfused	Number of Products Discarded	Discard Ratio*
<2,000 products annually	RBCs	31,297	1,322	4.22
	Platelets	1,979	196	9.90
	Plasma	3,062	568	18.55
	Cryoprecipitate	163	55	33.74
	Whole blood	294	213	72.45
2,000 - 7,999 products annually	RBCs	69,261	1,607	2.32
	Platelets	7,324	1,538	21.00
	Plasma	10,484	1,869	17.83
	Cryoprecipitate	1,316	191	14.51
	Whole blood	30	70	233.33
>8,000 products annually	RBCs	147,578	5,823	3.95
	Platelets	39,173	4,092	10.45
	Plasma	36,526	5,332	14.60
	Cryoprecipitate	21,131	3,675	17.39
	Whole blood	11	26	236.36
All facilities	RBCs	248,136	8,752	3.53
	Platelets	48,476	5,826	12.02
	Plasma	50,072	7,769	15.52
	Cryoprecipitate	22,610	3,921	17.34
	Whole blood	335	309	92.24

563 Transfusion Reactions Reported in MA

2016

Febrile Non-Hemolytic Reaction	**345**
Transfusion-Associated Circulatory Overload (TACO)	**70**
Allergic Reaction	**42**
Delayed Serologic	**32**
Transfusion-Associated Dyspnea	**28**
Hypotensive Transfusion Reaction	**19**
Acute Hemolytic Transfusion Reaction	**10**
Transfusion-Transmitted Infection	**9**
Delayed Hemolytic Transfusion Reaction	**5**
Transfusion-Related Acute Lung Injury (TRALI)	**3**
Post-Transfusion Purpura	**0**
TA-Graft Versus Host Disease	**0**

Data current as of May 22, 2017

N=70 facilities

Transfusion Transmitted Infections – 2015

Transfusion Date	Date	Age	Gender	Infection	Severity	Imputability	Unit
Apr 2015	May 2015	21	M	*Babesia*	Severe	Probable	RBCs
Apr 2015	Jun 2015	65	M	*Babesia*	Severe	Probable	RBCs
Jul 2015	Aug 2015	84	M	*Babesia*	Severe	Probable	RBCs
Jul 2015	Aug 2015	69	F	*Babesia*	Severe	Probable	RBCs
Aug 2015	Sep 2015	21	M	*Babesia*	Severe	Definite	RBCs
Aug 2015	Oct 2015	43	M	*Babesia*	Not severe	Probable	RBCs

N=69 facilities

Data current as of April 25, 2016

Transfusion Transmitted Infections – 2016

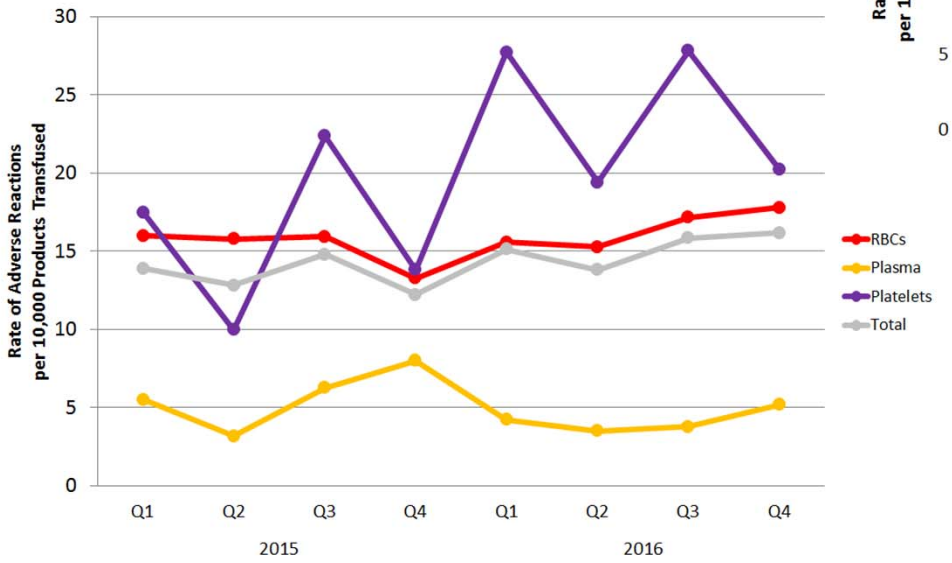
Reaction Date	Age	Sex	Infection	Severity	Imputability	Unit
1/2016	72	M	*Staph. aureus*	Life-threatening	Definite	Platelets
2/2016	84	M	*Babesia*	Severe	Possible	RBCs
5/2016	21	M	*Staph. aureus*	Severe	Definite	Platelets
5/2016	2	M	*Staph. aureus*	Severe	Definite	Platelets
5/2016	60	M	*Staph. epidermidis*	Not severe	Definite	RBCs
8/2016	68	M	*Babesia*	Severe	Probable	RBCs
9/2016	60	M	*P. fluorescens*	Fatal	Definite	RBCs
9/2016	87	M	*Staph. aureus*	Life-threatening	Possible	Platelets
11/2016	60	F	*Babesia*	Unknown	Definite	RBCs

N=70 facilities

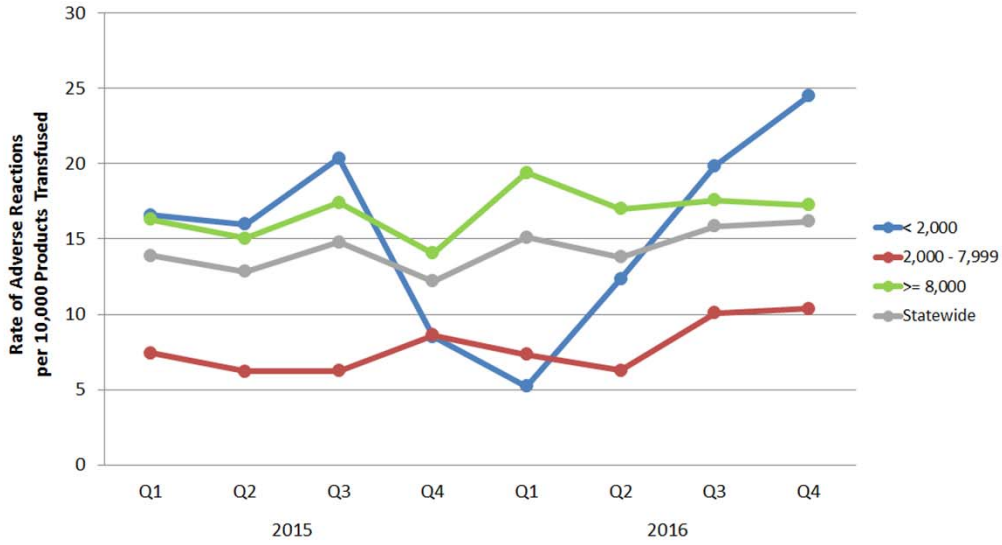
Data current as of May 22, 2017

Hemovigilance in MA

Rates of Adverse Reactions by Product Type



Rates of Adverse Reactions by Transfusion Volume Group



N=70 facilities

Data current as of May 22, 2017

Ways that Hemovigilance Data is Being Used in MA

- Benchmarking (feedback to facilities)
  - Stratified by facilities of similar size
- Identification and examination of “outliers”
  - Facilities
  - Data Points (i.e. AHTRs in 2016)
- Examination of trends
  - Utilization
  - Adverse Reactions (i.e. change in TTIs from 2015 to 2016)
- External collaboration, i.e. PRT in Switzerland

Suggestions for Promoting Hemovigilance (NHSN) in Other Jurisdictions

- Identify and Engage Hemovigilance Champions
- Connection between Epidemiology, Health Care Quality and Regulatory (Blood Banks)
- Consider replacing existing reporting with NHSN
- Engage Blood Bank/Transfusion Community Early
- Consider Survey/Assessment of current knowledge
- Include CDC/NHSN Hemovigilance Group

Questions?

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