

Donor selection for blood safety: is it still necessary?

Dr. C K Lin

Chief Executive and Medical Director

Hong Kong Red Cross Blood Transfusion Service



Blood Donor Selection

- Protect transfusion recipient by collecting blood from donors at no/low risk for any transfusion transmissible infection
- Protect donor by selecting suitable ones that are fit for blood donation
- Safeguard sufficiency of blood supply by deferring only those who are not suitable to donate



Donor Selection Process

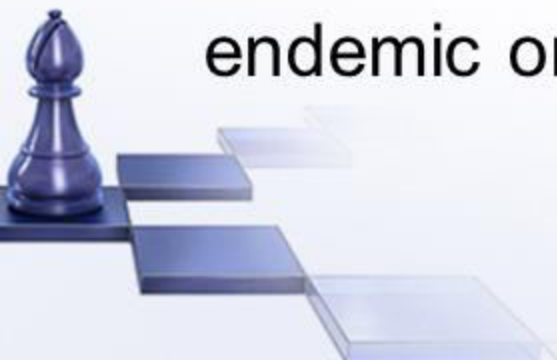


- Pre-donation information
- Health history questionnaire filled by donors
- Confidential interview by trained personnel
- Physical examination



Donor Selection in Enhancing Blood Safety

- To fill the gap due to limitations of laboratory testing technology, i.e. window period
- To cover emerging infections that are not routinely tested or have no suitable test available for screening
- To enhance cost-effectiveness of blood supply by screening donor through selection instead of donated blood by laboratory testing for non-endemic or imported infection



Infectious markers screening

HIV-1 & HIV-2

- a combination of HIV antigen-antibody or HIV antibodies

Hepatitis B

- hepatitis B surface antigen (HBsAg)

Hepatitis C

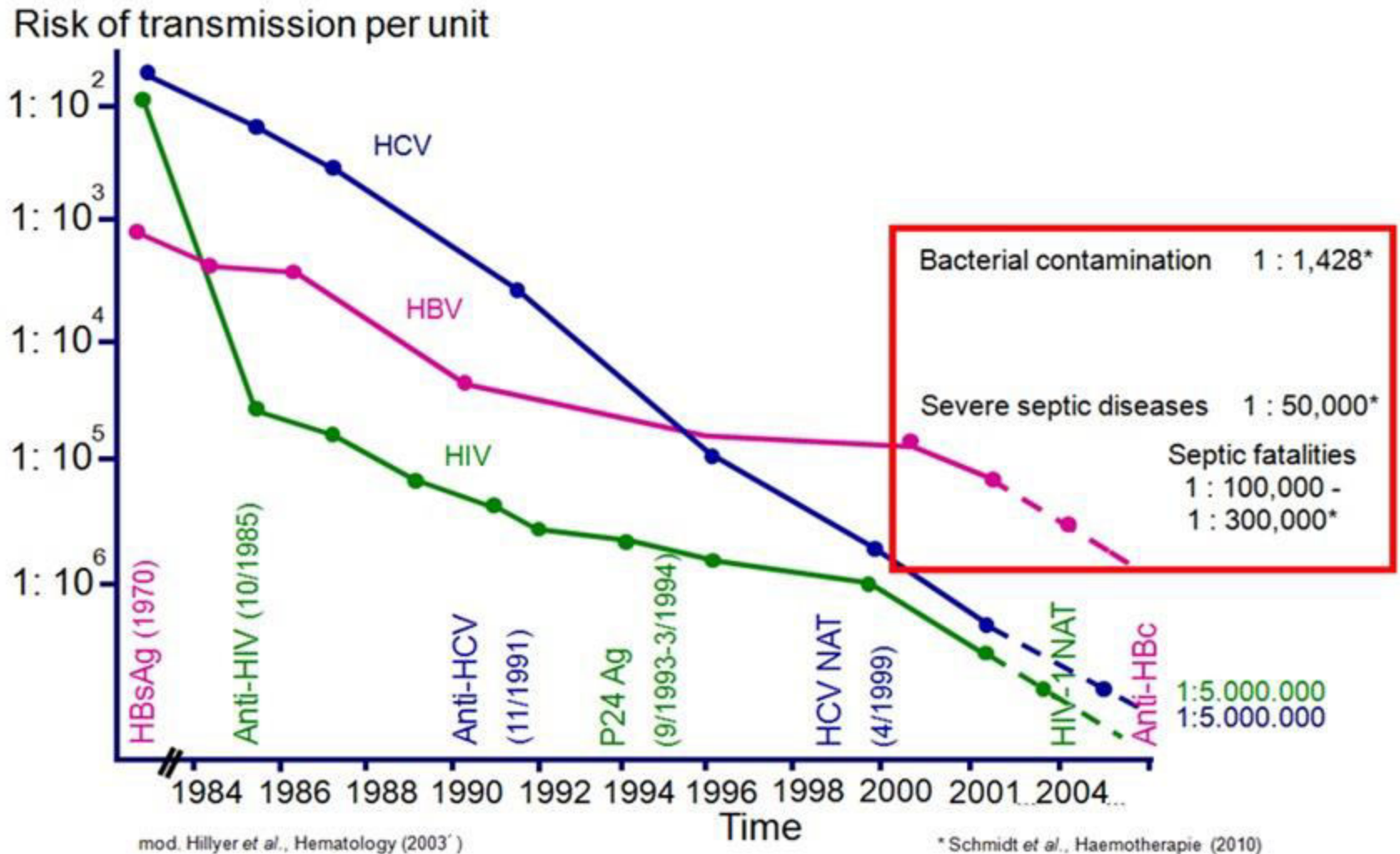
- combination of HCV antigen-antibody or HCV antibodies

Syphilis
(*Treponema pallidum*)

- specific treponemal antibodies



Risk of Infection Transmission

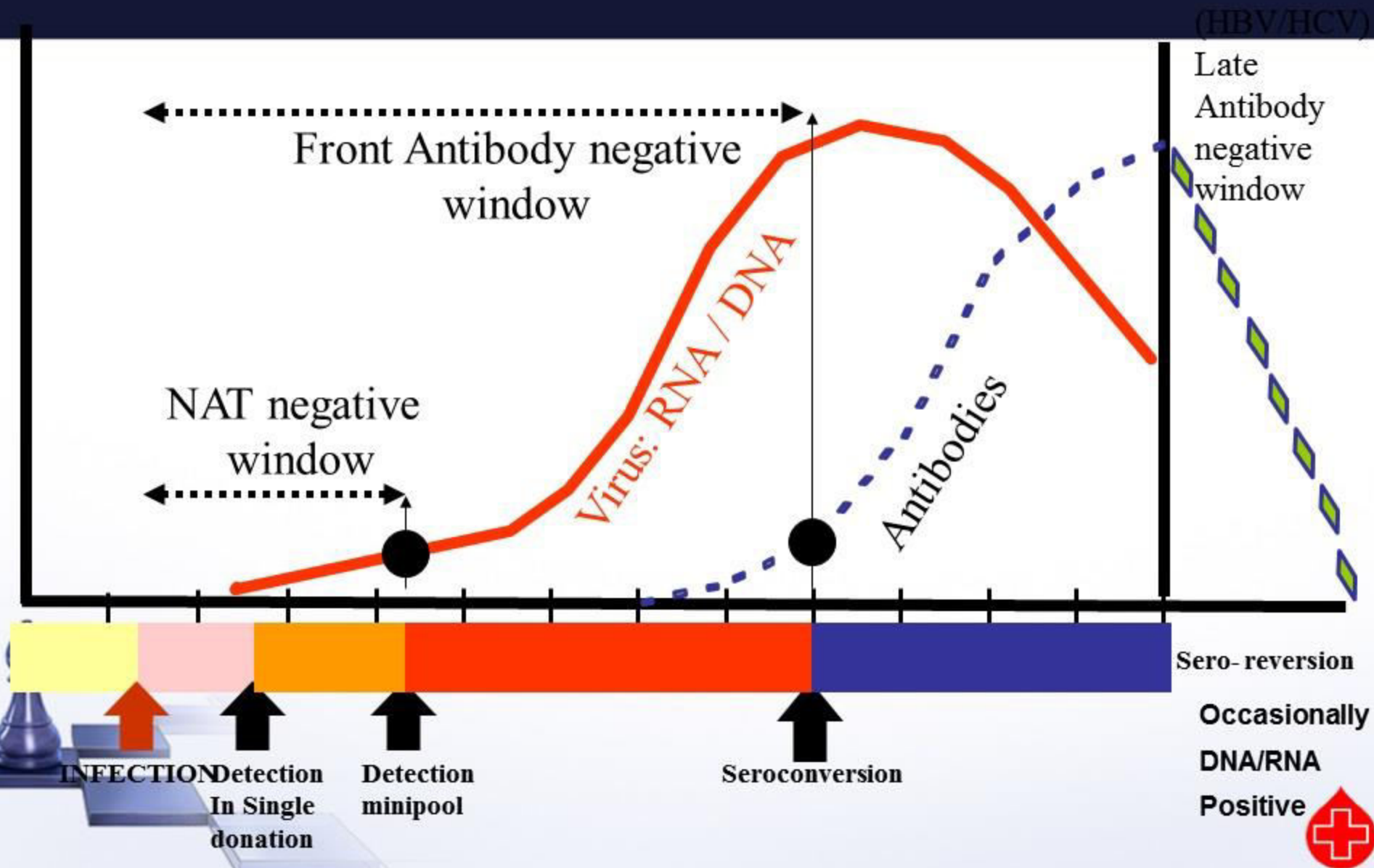


Residual Risks of HIV, HCV and HBV

Infection	Current estimation	Estimate of residual risk with tested blood per unit 2007-09
HIV	Approximately 1 in 5.7 mn	Approximately 1 in 2.4 mn
HCV	Approximately 1 in 26 mn	Approximately 1 in 8 mn
HBV	Approximately 1 in 55,000	Approximately 1 in 58,000



Window Period of TTI



Window Period of TTI

Infection	Window (days)	
	Serology	NAT
HIV	22	5.5
HCV	82	4.9
HBV	59	20.6



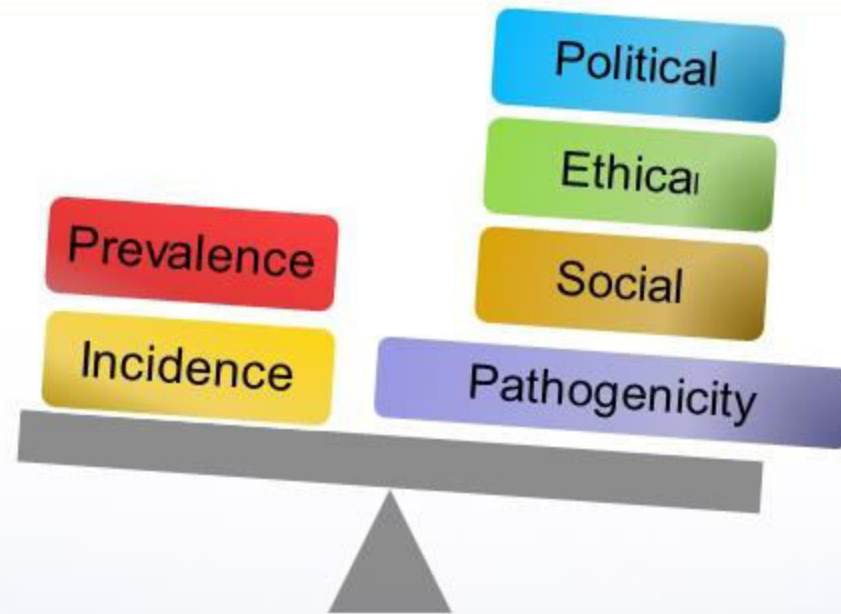
Other Transfusion Transmissible Infection

- Other known TTI
 - Bacterial
 - Protozoan, e.g Malaria, Chagas
 - Viral, e.g. dengue, WNV, parvovirus B19
 - Prion
- Unknown emerging infection
 - HIV in 1980s
 - Outbreak may be explosive & worldwide, e.g. SARS coronavirus started in Southern China in 2003



Testing Strategy for Donated Blood

Cost-effectiveness and other considerations
in deciding testing strategies



Selection based on Donor's Medical History

Minor illness

Non-communicable diseases

- Haematological disorders
- Cardiovascular diseases, including hypertension
- Gastrointestinal diseases
- Immunological diseases
- Respiratory diseases
- Metabolic and endocrine diseases
- Musculoskeletal diseases

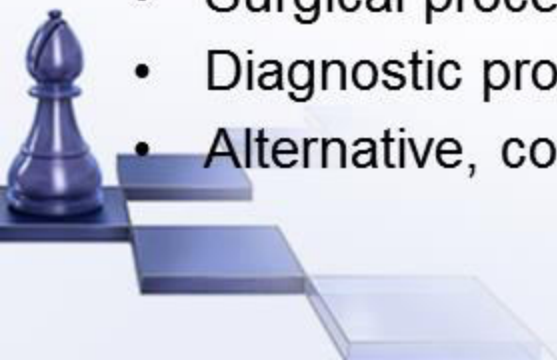
Non-communicable diseases

- Skin diseases
- Central nervous system diseases
- Renal diseases
- Malignant disease
- Psychiatric disorders



Selection based on Donor's Medical History

- Transfusion-transmissible infections
 - Viruses
 - Bacteria
 - Rickettsia
 - Protozoa
- Medical and surgical interventions
 - Immunizations
 - Medications
 - Blood transfusion, organ and tissue transplantation
- Surgical procedures including dental treatment
- Diagnostic procedures
- Alternative, complementary and traditional medicine



Selection based on Donor's Occupation and Lifestyle


- Country of residence and travel history
- Occupation and leisure activities
 - Donor risks
 - Blood safety risks
- High risk behaviour
 - High risk sexual behaviours
 - Use of recreational drugs
 - Incarceration in prisons and penal institutions
- Cosmetic treatments and rituals



Is Donor Selection Still Necessary?



YES!



**But there are
critical issues we
need to address**



Donor Compliance

Effectiveness of donor selection critically depends on compliance of donors to the questionnaire

- Feel comfortable to disclose sensitive personal information
 - Protection of donors' privacy
 - Skill of staff conducting the confidential interview
 - Management of deferral and counselling
- Understand the background rationale of questions
 - Pre-donation information and education
 - Choice of questions and their wordings

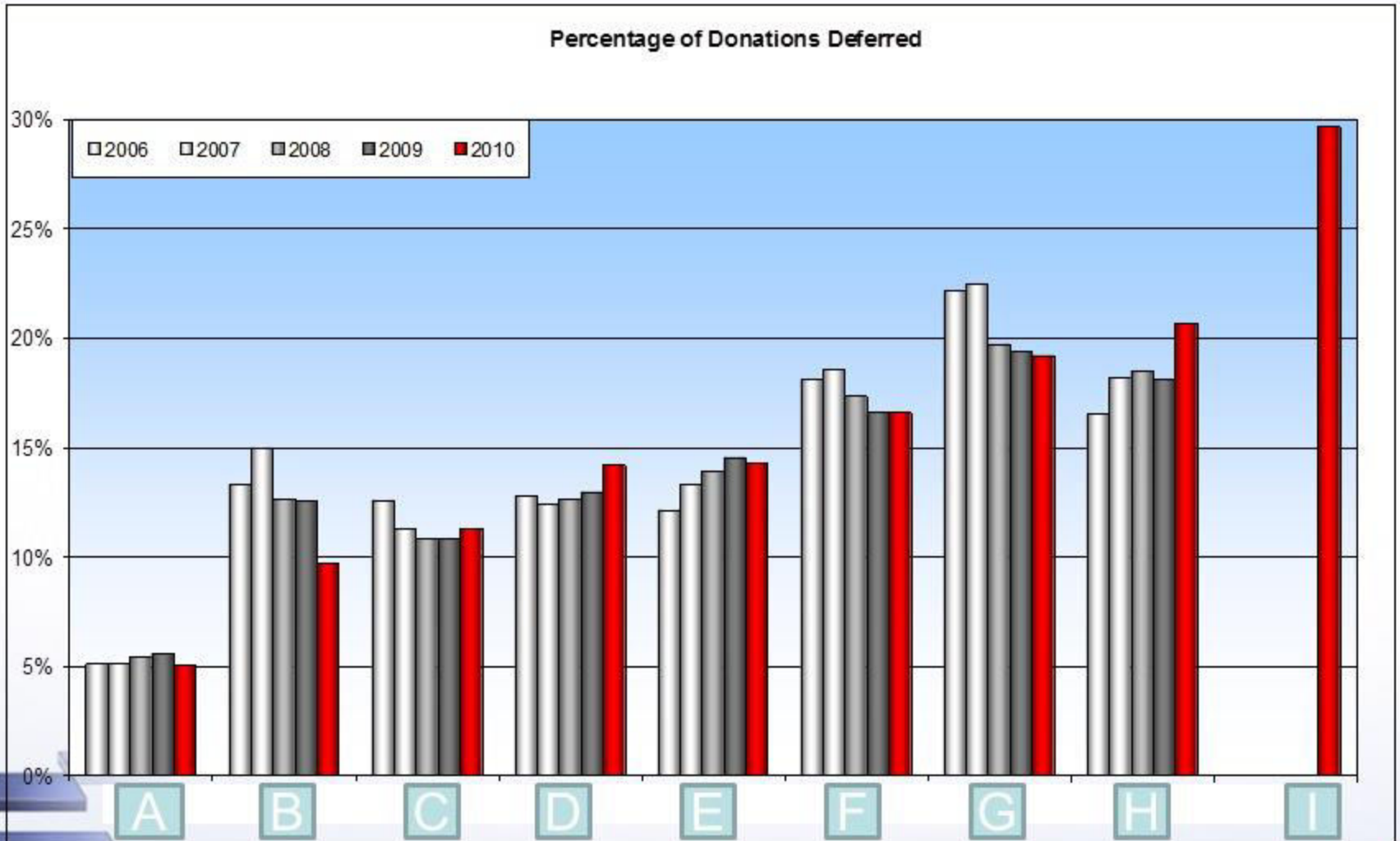


Donor Wastage

- Selection causes lost in blood donors and can potentially result in inadequate blood supply
- Should aim effectively selecting suitable donors to give blood, not the safest
- Deferred donors should be properly counselled including information related to re-entry to minimize donor wastage



Donor Deferral



Deferral to Prevent One TTI is high

TTI	Deferrals to prevent one case (no.)
HBV	39,760
HCV	564,600
HIV	352,875
Syphilis	42,772

* De Kort et al., 2013



Risk and Evidence Based Questions and Selection Criteria

- What is the nature and size of the risk, e.g. tattoos, MSM?
- What is the prevalence / incidence of the risk?
- What is the validity of the laboratory test, the donor selection question and criteria?
- What is the overall cost-effectiveness?

* De Kort et al., 2013



WHO Recommendations

Blood
Donor
Selection

Recommendations on Assessing
Suitability for Blood Donation

Pre-Publication Version
June 2011



Good practice for donor selection

1

- National donor selection guidelines and criteria should be based on epidemiological and/or scientific evidence or, where evidence is limited or lacking, on best practices

2

- Donor acceptance and deferral policies for the prevention of TTI should be based on up-to-date information on the local epidemiology of infections, the markers screened for, the availability of suitable blood screening and confirmatory assays, and the technologies in use



World Health
Organization

Blood donor selection. Guidelines
on assessing donor suitability for blood donation. 2012



Good practice for donor selection

3

- National donor selection criteria should defined conditions of acceptance and deferral for each criterion

4

- Adequate resources, including a sufficient number of qualified and trained staff, should be made available for the consistent and reliable assessment of donor suitability for blood donation



World Health
Organization

on assessing donor suitability for blood donation. Guidelines
on assessing donor suitability for blood donation. 2012



Good practice for donor selection

5

- Quality systems should be in place for blood donor selection, including selection criteria, staff training and documentation

6

- Blood transfusion services should establish mechanisms for monitoring and evaluation to assess the implementation and effectiveness of donor selection criteria



World Health
Organization

Blood donor selection. Guideline
on assessing donor suitability for blood donation. 2012



Conclusion

- Blood donor selection is still necessary for protecting donors, recipients and blood supply
- For effective prevention of TTIs, it should be based on up-to-date information and evidence on the local epidemiology, the availability of suitable blood screening and confirmatory assays, and the technologies in use
- Donor compliance in providing truthful responses is critical
- Unnecessary deferral should be minimized



THANK YOU

