

9054 '01 MAR -1 AM :49

Estimates of US Blood Donors Who Traveled/Resided in Countries Exposed to BSE During 1980-1996

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National Heart, Lung, and Blood Institute (REDS)
- in cooperation with the American Association of
Blood Banks and America's Blood Centers

1999 Blood Donor Travel Survey:

Survey Overview

The 1999 Blood Donor Travel Survey:
Methods

- ◆ Random sample from 12/98 or 1/99 donors at twelve blood center sites
- ◆ 19,067 anonymous OPSCAN surveys - single mailing + cover letter
- ◆ 9,541 responses (~ 50%)
- ◆ Travel, sex, age (5 strata), FT/Rpt, education (7 strata)

The 1999 Blood Donor Travel Survey:
Travel Questions

Did you live in the United Kingdom (England, Scotland, Wales, N. Ireland, Isle of Man, Channel Islands) or the Republic of Ireland between 1980-89/1990-96 ?

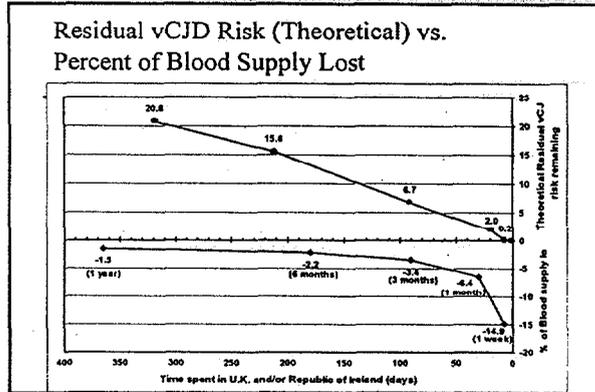
If 30 days or less
1-3 days, 4-10 days, 11-30 days

If less than one year
1-4 months, 5-8 months, 9-11 months

If one year or more
1-2 years, 3-5 years, more than 5 years

Est. Blood Donor Travel to UK

- ◆ 1980-1996 **22.8%**
Range by blood center - 10.2 - 31.7%
Higher travel with education, age, repeat status
Higher survey return rates: Repeat donors (corrected)
Older donors (not corrected due to lack of complete data)
- ◆ UK travel Per Year **1.3%**



6 Month UK Travel Deferral: Observed Impact

UK Travel Deferral Impact

- ◆ Self deferral before blood drive (??)
(media, letters to donors, recruitment screening, telephone inquiries)
- ◆ Self-deferral at blood drive (??)
(Donor educational material, Self-admin Qs)
- ◆ Interview-based deferral *
- ◆ Failure to appropriately defer ??
(False negative responses, incl. post-donation information)

UK Travel Deferral Experience: Interview- Based Deferrals

- ◆ Interview-based deferral 1999-00
 - ARC system 0.13% (61% repeat)
 - NBDRC 0.33% (75% repeat)
 - NYBC 0.6%
 - BCP (SF) 1.0%
 - Canadian Blood Services (CBS) 0.22%
- (NB: CBS tracked 0.6% pre-site deferral through telephone interview, recruitment pre-screen)

Travel to France and other BSE Countries

The 1999 Blood Donor Travel Survey: Travel to non-UK Europe

Did you travel to or live elsewhere in Europe
between 1980-96? Same time intervals as UK question
(Provides cumulative time spent in Europe)

Please indicate if you traveled to or lived in any of
the countries listed below during this time period

France	Netherlands	Germany
Portugal	Belgium	Switzerland
Luxembourg/Liechtenstein		

(Provides prevalence of any visits to BSE country 1980-1996)

Prevalence any Donor Travel/Residence in UK and Other BSE Countries During 1980-96

	UK	Non-UK BSE	Any BSE
1980-1996	22.8%*	29.2%†	35.5%‡
Per Year (unadjusted)	1.3%	1.4%	1.9%

*Range by blood center - 10.2 - 31.7%

†Range by blood center - 10.2 - 40.2%

‡Range by blood center - 14.6 - 47.7%

‡14.4% traveled to both UK and non-UK BSE countries

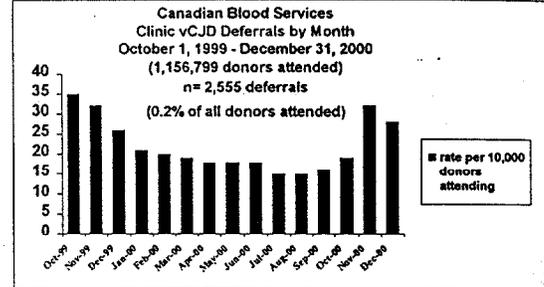
Impact of Deferral for 6 months Travel in France

- ◆ Survey prediction: (assumes similar duration of travel within countries)

15.6% (France - ever) : 22.8% (UK - ever)
therefore, ~ 2.2% UK - 6 mos. :

1.5% France - 6 mos.)

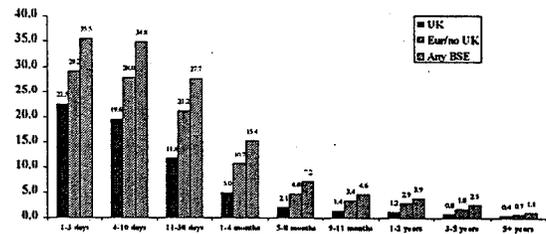
(Canadian Blood Services - 1.7x increase in deferrals for addition of independent 6 mo. cumulative travel to France)



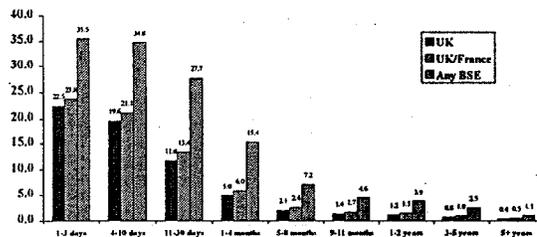
Prevalence of Donor Travel/Residence (T/R) in Non-UK BSE Countries During 1980-1996

Prev. of any T/R 1980-1996	Ratio to UK T/R
UK (22.8%)	
France 15.6%	0.7
Germany 14.6%	0.6
Switzerland 9.8%	0.4
Netherlands 7.1%	0.3
Belgium 5.9%	0.3
Luxembourg 3.7%	0.2
Portugal 2.2%	0.1
any non-UK BSE 29.2%	1.3

Cumulative Prevalence of Donor Travel to UK, Europe, and Any BSE Country 1980-1996



Cumulative Prevalence of Donor Travel to UK, UK/France and any BSE Country 1980-1996



BSE Exposure/Donor Loss Analysis

Among travel survey respondents.....

- ◆ Total UK BSE exposure 252,804 p-d
- ◆ Total non-UK BSE exposure 516,022 p-d
- ◆ Corrected non-UK BSE exposure 51,602 p-d
- ◆ Total BSE exposure: 304,406 p-d

BSE Exposure/Donor Loss Analysis

UK 6 months

UK p-d removed: 217,411/252,804 (86.0%)

Total p-d removed: 217,411/304,406 (71.4%)

Residual total p-d: 86,995

Donor loss: 2.2%

% p-d removed/1% donor loss: 32.5

BSE Exposure/Donor Loss Analysis

UK 3 months, given 6 month UK deferral

Residual p-d removed:

18,455/86,995 (21.2%)

Total p-d removed: 235,866/ 304,406 (77.5%)

Add. donor loss: 1.2%

% residual p-d removed/1% donor loss: 17.6

BSE Exposure/Donor Loss Analysis

UK 1 month, given 6 month UK deferral

Residual p-d removed:

28,567/86,995 (32.8%)

Total p-d removed: 245,978/304,406 (80.8%)

Add. donor loss: 4.2%

% residual p-d removed/1% donor loss: 7.8

BSE Exposure/Donor Loss Analysis

Europe >5 yrs + UK 6 Months

Residual p-d removed:

2414/86,995 (2.7%)

Total p-d removed: 219,825/304,406 (72.2%)

Add. donor loss: 0.7%

% residual p-d removed/1% donor loss: 3.9

BSE Exposure/Donor Loss Analysis

Europe 3-5 yrs + UK 6 Months

Residual p-d removed:

3782/86,995 (4.4%)

Total p-d removed: 221,193/ 304,406 (72.6%)

Add. Donor loss: 1.8%

% residual p-d removed/1% donor loss: 2.4

BSE Exposure/Donor Loss Analysis

Europe 1-2 yrs + UK 6 Months

Residual p-d removed:

4174/86,995 (4.8%)

Total p-d removed: 221,585/304,406 (72.8%)

addl. Donor loss: 2.9%

% residual p-d removed/1% donor loss: 1.7

Special Donor Populations

US military and dependents stationed in Europe (1980-1996)

- ◆ est. total population size: 4.4 million (DoD)
 - est. adult population now (84%): 3.7 million
(based on U.S. census household/family characteristics ests.)
 - est. current donors: ~ 236,800/yr*
(based on NHIS weighted est of 6.4% of total adults donate/year)
- ⇒ 3.0 % of US donors/yr

*age-related decline in donation not considered

1998 REDS Donor Survey: Ingestion of Mammalian Brain in Foods

- ◆ Have you ever eaten foods or dishes that are made with brains of a mammal? (Mammals include sheep, cows, squirrels, pigs, monkeys, and goats)

- ◆ One species 8.7%
- ◆ Two species 1.6%
- ◆ Three or more species 0.6%

(Overall, 3.7% beef, 2.0% pig, 0.8% lamb, 0.3% squirrel, 0.2% goat, 0.1% unknown, <0.1% rabbit, <0.1% monkey)

1999 Travel Survey: Blood Donor Exposure to Deer and Elk

- ◆ Hunted deer or elk 1145/8610 (13.3%)
 - field dressed 583/8610 (6.8%)
- ◆ Ate deer or elk 5380/8598 (62.6%)
 - killed in the wild
 - Yes 3437/8598 (40.0%)
 - Don't know 476/8598 (5.5%)
 - ate brain or spinal cord
 - Yes - 15/8598 (0.2%)
 - Don't know 226/8598 (2.6%)

Tissue and Cell Donors

- ◆ Assumption: Screened blood donors (with demographic adjustment) reasonably predict travel characteristics of tissue and cell donors

UK Travel Prevalence by Sex and FT/Repeat Status among Blood Donors

Sex*	UK Travel	FT/Repeat*	UK Travel
Male	23.4%	FT	13.8%
Female	22.5%	Repeat	23.0%
Overall	22.8%	Overall	22.8%

*Confounded by other demographic variables

UK Travel Prevalence by Age among Blood Donors

Age*	UK Travel
17 - 29	16.4%
30-39	24.8%
40-55	21.7%
56-65	26.8%
>65	30.8%
All ages	22.8%

*Confounded by other demographic variables

UK Travel Prevalence by Education among Blood Donors

Education	UK Travel
<8 th grade	0.9%
9-11	0.6%
12th	0.5%
HS grad	5.4%
Some college	20.0%
College grad	37.2%
Post grad	36.3%
Overall	22.8%

*Confounded by other demographic variables

Future need: Rapid Response Data Network

- ◆ 8 -10 representative blood center sites
- ◆ Capable donor/donation data systems
- ◆ Rapid survey capability (OMB clinical exemption, IRB review, staffing)
- ◆ (Blood collection,inventory,distribution)

Study Limitations

- ◆ Blood donor survey risk estimates are reproducible, but are based upon self-report. Accuracy has not been validated by other independent measures.

Acknowledgements:

- ◆ All prior acknowledgements.....
- ◆ JoAnne Chiavetta, PhD - Canadian Blood Services
- ◆ Marian Sullivan, MPH - National Blood Data Resource Center
- ◆ Deborah Kessler, RN - New York Blood Center
- ◆ Baoguang Wang, MD, DrPH - Westat, Inc.
- ◆ Steven Schweinfurth, MS - Westat, Inc.
- ◆ Edward Notari, IV, MPH - ARCNET Research and Surveillance Program
- ◆ Michael Busch, MD, Ph.D - Blood Centers of the Pacific

BSE Exposure/Donor Loss Analysis

UK 3 months de novo

UK p-d removed: 235,866/252,804 (93.3%)

Total p-d removed: 235,866/304,406 (77.5%)

Donor loss: 3.4%

% p-d removed/1% donor loss: 22.8

BSE Exposure/Donor Loss Analysis

UK 1 month de novo

UK p-d removed: 245,978/252,804 (97.3%)

Total p-d removed: 245,978/304,406 (80.8%)

Donor loss: 6.4%

% p-d removed/1% donor loss: 12.6