

# ESRD

## Differences in treatment - A worldwide overview – Update 2004

[IRCT- Différences dans le traitement - une vue  
d'ensemble mondiale – Mise à jour 2004]

*version for internet download*

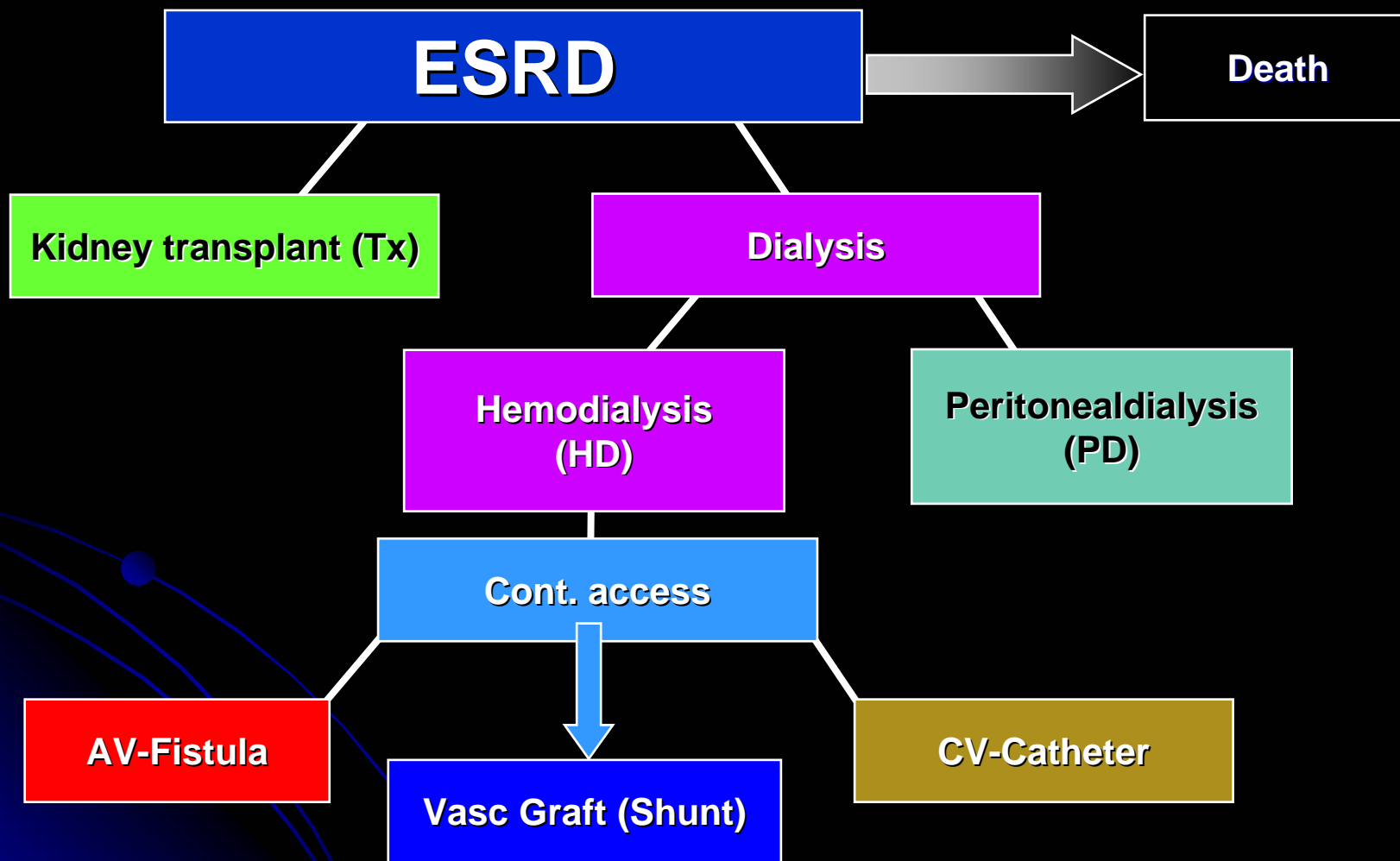
*Wolfgang Meichelboeck, Dipl.-Ing.  
Munich-Pentenried - Germany*



**wm @ SFAV & STN Tunis-Gammarth Tunisia  
May 27-29, 2004**



# ESRD treatment modalities (RRT)



# ESRD International data - validity

## *International ESRD/RRT data*

- Collect epidemiological data with incidence/prevalence rates
- status of the RRT
- understand data and publications from other countries
- compare with own treatment modalities and outcomes

- **REGISTRIES:**
  - Mandatory (only some)
  - Voluntary (many)
  - No registry at all (most)
- response rates within the national registries vary
- inclusion criteria & reporting standards ?
- Reporting time too long!  
(No data from the same year)

# Examples for Renal Registries on the Internet

website		Name	Area or country
<a href="http://www.ifrr.net/">www.ifrr.net/</a>		IFFR	International
<a href="http://www.slanh.org/">www.slanh.org/</a>		SLANH	South & Latin America
<a href="http://www.anzdata.org.au/">www.anzdata.org.au/</a>		ANZDATA	Australia & New Zealand
<a href="http://www.usrds.org/">www.usrds.org/</a>		USRDS	USA
<a href="http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=AR_5_E">secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=AR_5_E</a>		CORR	Canada
<a href="http://www.era-edta-reg.org">www.era-edta-reg.org</a>		ERA-EDTA	Europe / International
<a href="http://www.quasi-niere.de/">www.quasi-niere.de/</a>			Germany
<a href="http://www.renalreg.com/">www.renalreg.com/</a>		UK RR	UK
<a href="http://www.sin-ridt.org/sin-ridt/sin-ridt.org.htm">www.sin-ridt.org/sin-ridt/sin-ridt.org.htm</a>		SIN RIDT	Italy
<a href="http://www.nephro.no">www.nephro.no</a>			Norway
<a href="http://www.crc.gov.my/nrr/index.htm">www.crc.gov.my/nrr/index.htm</a>			Malaysia

# World wide trends in the underlying disease





• Diabetes (DM)

• Glumerolo-  
nephritis (GN)



# ESRD - underlying disease

The most common diseases in selected registries 1996

<b>Diseases</b> ( % of ESRD pat in RRT)	<b>USRDS</b> <b>(USA)</b>	<b>CORR</b> <b>(Canada)</b>	<b>ANZDATA</b> <b>(AUS / NZ)</b>	<b>JSDT</b> <b>(Japan)</b>
<b>Incidence</b>				
<b>Diabetes</b>	42%	29%	19%	34%
<b>Hypertension</b>	26%	10%	10%	7%
<b>Glomerulonephritis</b>	11%	16%	35%	38%
<b>Point-Prevalence</b>				
<b>Diabetes</b>	32%	23%	30%	22%
<b>Hypertension</b>	25%	9%	12%	4%
<b>Glomerulonephritis</b>	18%	20%	22%	54%

Schena FP:

Epidemiology of end-stage renal disease: International comparison of renal replacement therapy. Kidney International (2000); Vol.57 Suppl.74:S39-S45





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# ESRD - underlying disease - DM vs. GN

1996



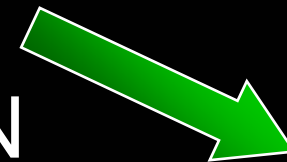
2001/2002

<b>Diseases</b>	<b>USRDS (USA)</b>	<b>CORR (Canada)</b>	<b>ANZDATA (AUS / NZ)</b>	<b>JSDT (Japan)</b>
<b>Incidence 1996 (1)</b>				
<b>Diabetes (DM)</b>	42%	29%	19%	34%
<b>Glomerulonephritis</b>	11%	16%	35%	38%
<b>Incidence 2001/2002 (2)</b>				
<b>Diabetes (DM)</b>	45%	32%	30%	38%
<b>Glomerulonephritis</b>	8%	13%	30%	32%

DM



GN

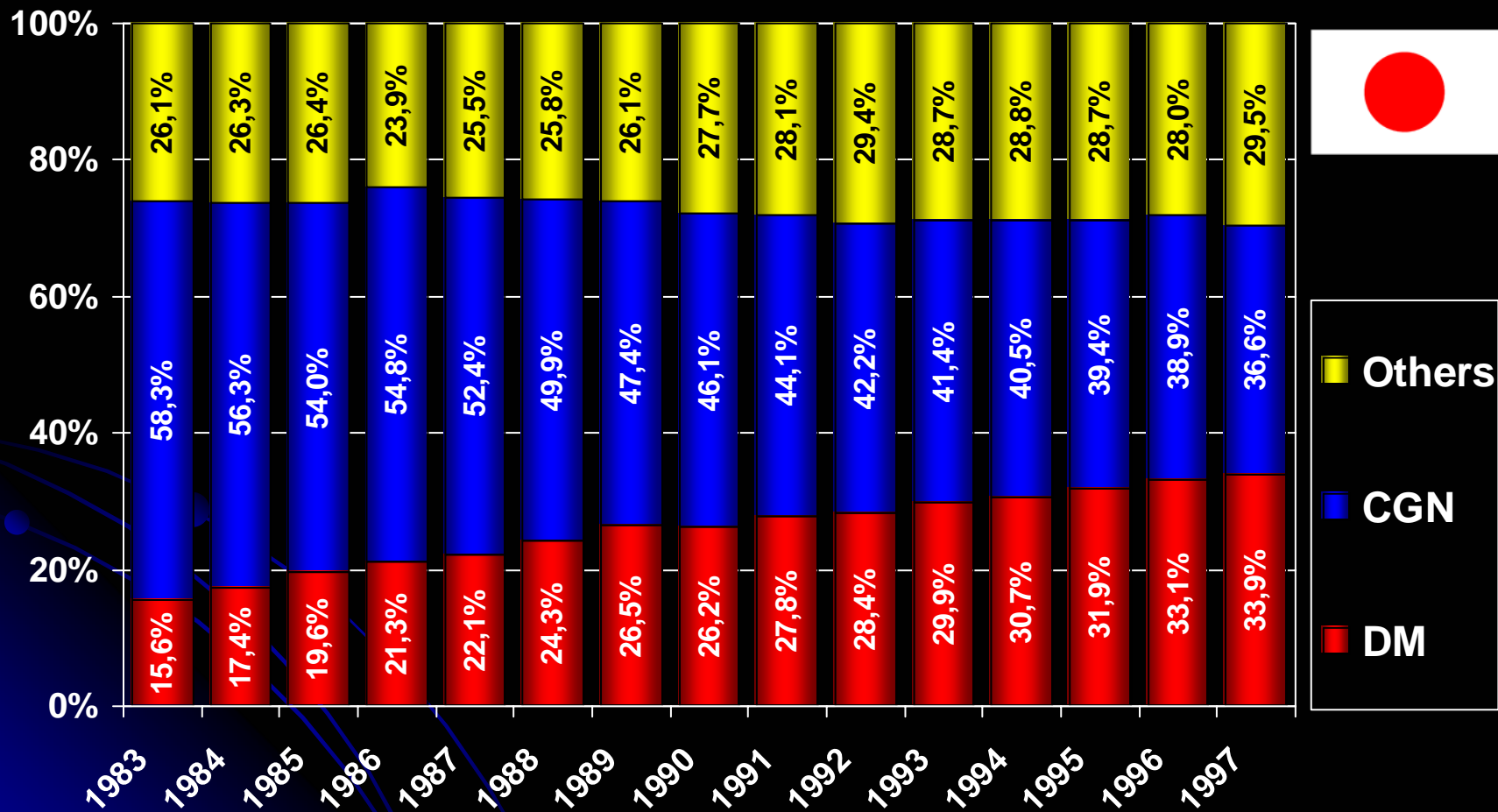


(1) Schena FP Kidney International (2000)

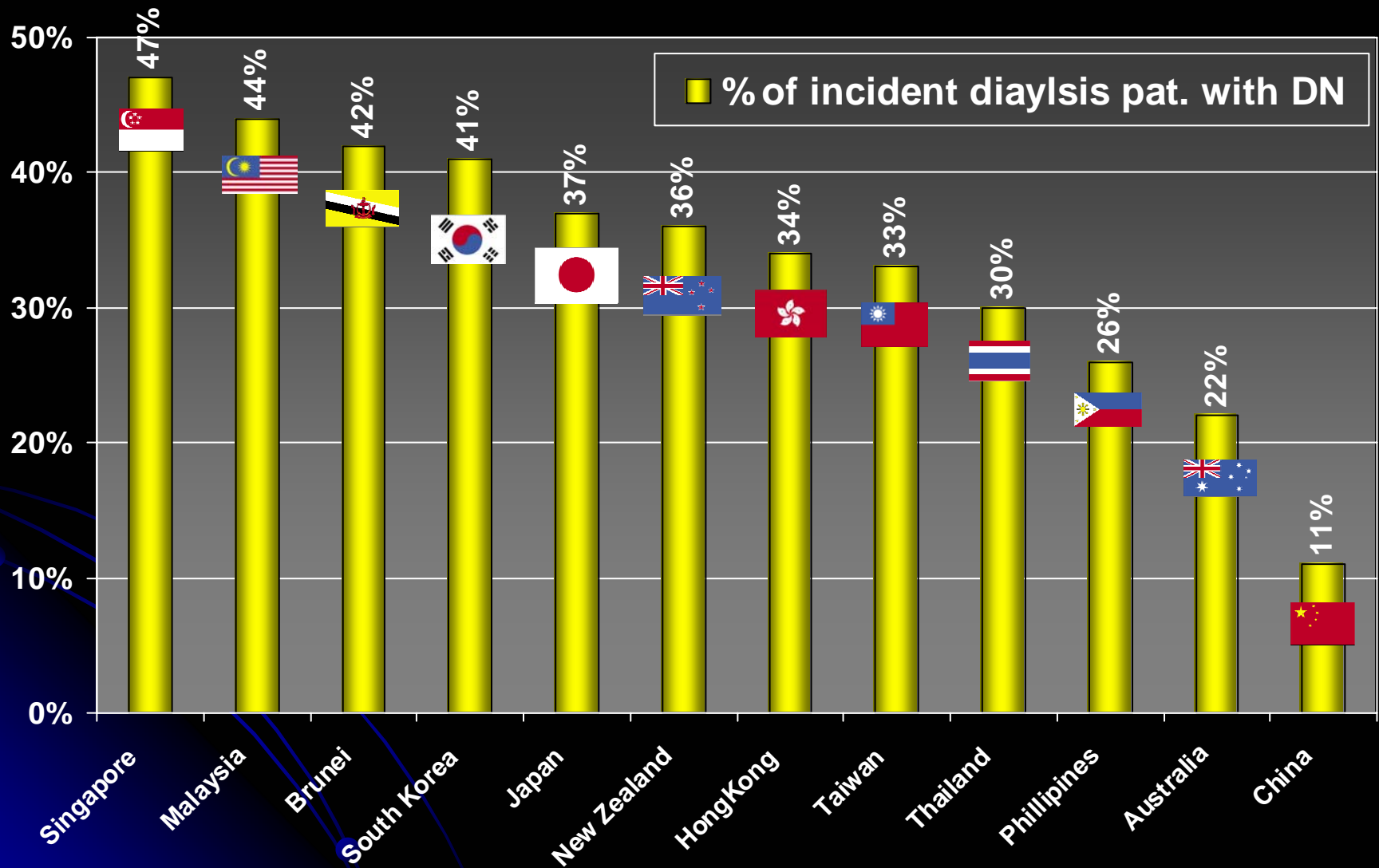
(2) USRDS 2003, CORR 2001, ANZDATA 2002, JSDT 2003

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# Incidence of DM and GN in JAPAN 1983 to 1997



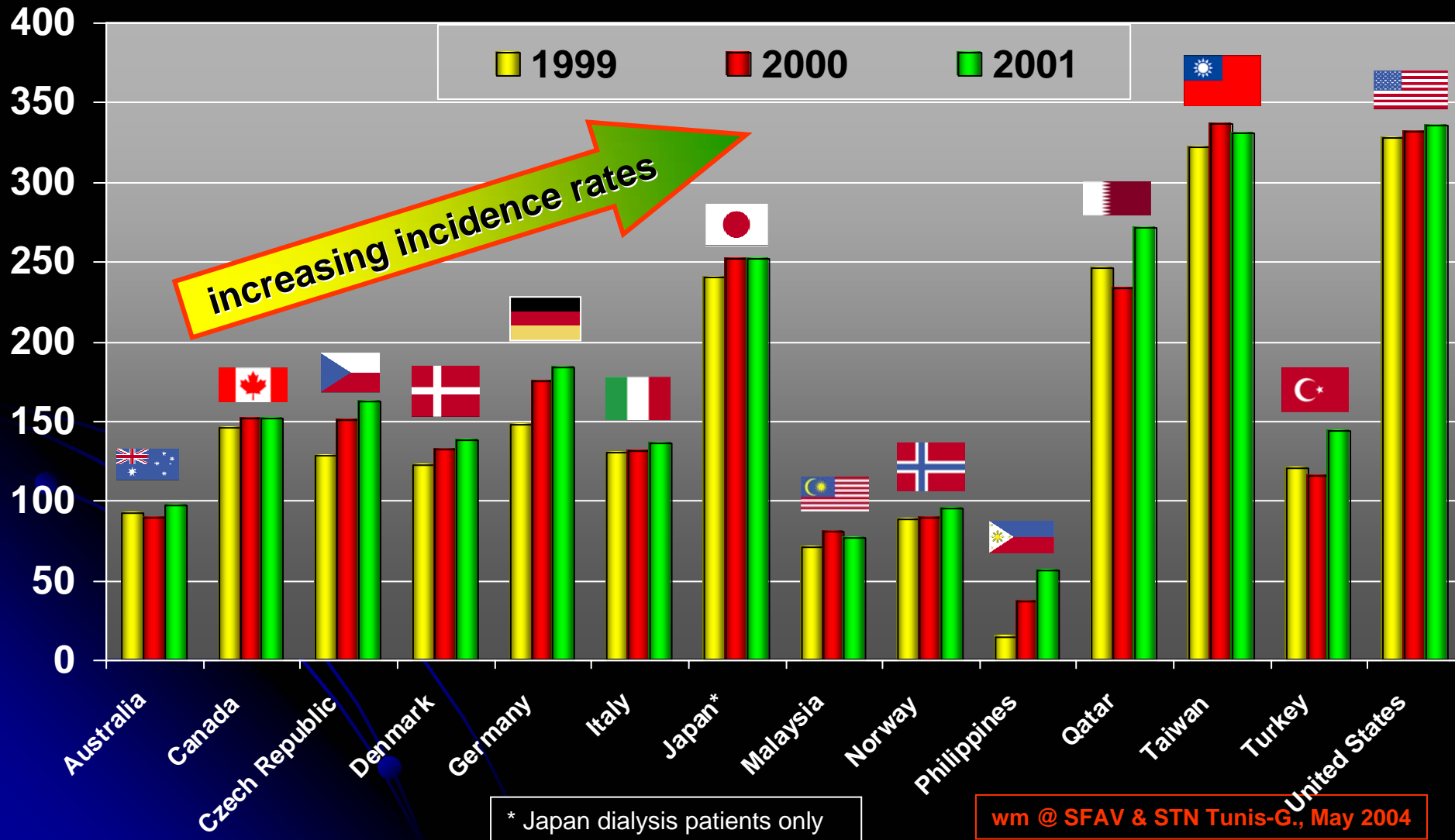
# Diabetic nephropathy (DN) as cause of ESRD in 2000 in Asia-Pacific Region



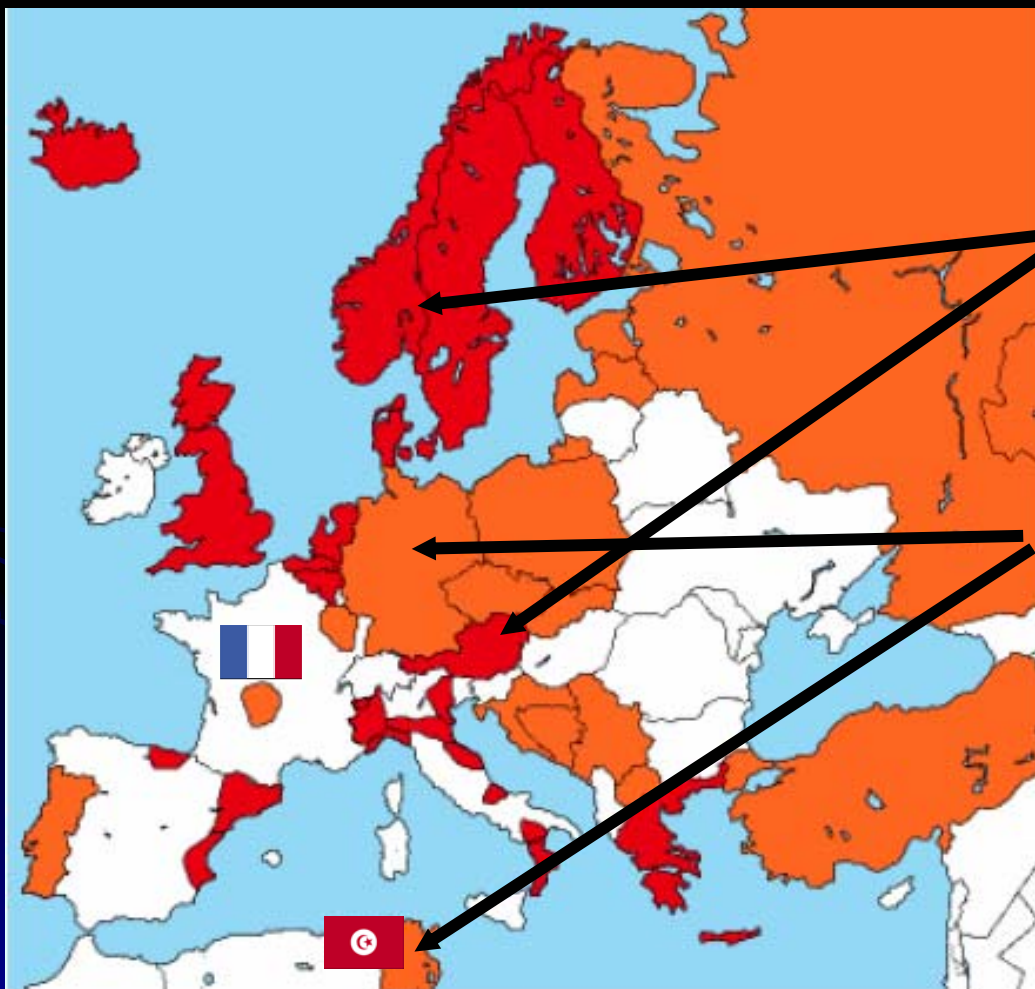
# Trends in worldwide incidence rates

# Trends in worldwide incidence rates (per million population - pmp)

selected countries from the USRDS-2003 report chapter 12




# Europe ERA-EDTA Register



- 31 registries:
- **RED:**  
15 countries - data in the ERA database
- **ORANGE:**  
16 countries with own database - sending data to ERA

# RRT in the 5 major countries in Western Europe

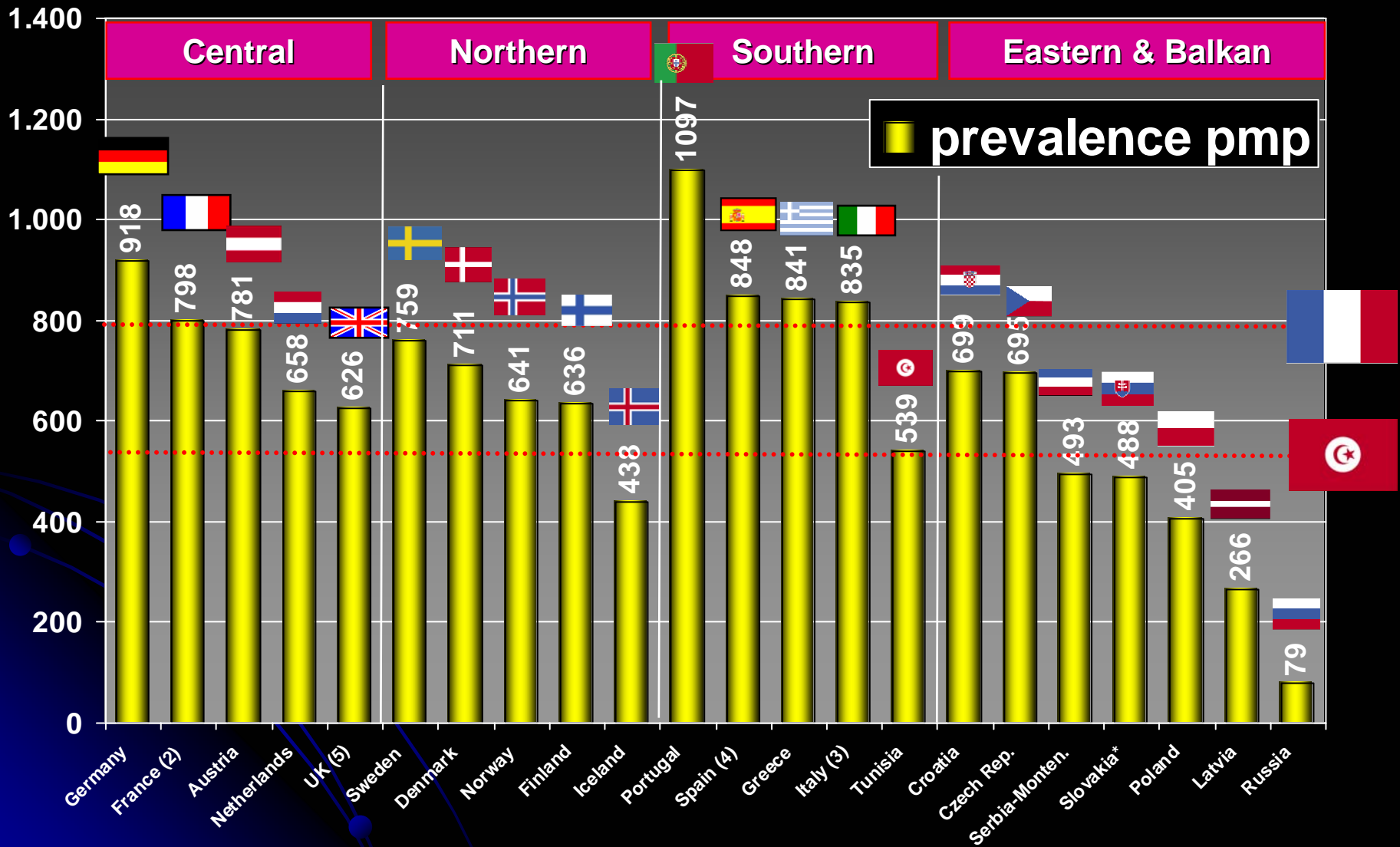
Country	year	pop Mill.	ESRD incid. pmp	ESRD prev pmp	HD %	PD %	Tx %
Germany (1) 	2002	82.5	174	918	72%	4%	25%
France (2) 	2003	63.8	122	798	53%	3%	44%
Italy (3) 	2001	56.3	136	835	71%	8%	20%
Spain (4) (78%) 	2000	31.3	132	848	52%	5%	43%
UK (5) 	2002	59.2	103	640	39%	15%	46%

- (1) German Report 2002 [www-quasi.niere.de](http://www-quasi.niere.de)
- (2) Project R.E.I.N preliminary data, Oct 2003
- (3) SIN-RIDT Report 2001
- (4) Amenabar JJ, et al. Nefrologia 2002
- (5) UK Renal Registry Report 2003 (prelim.)

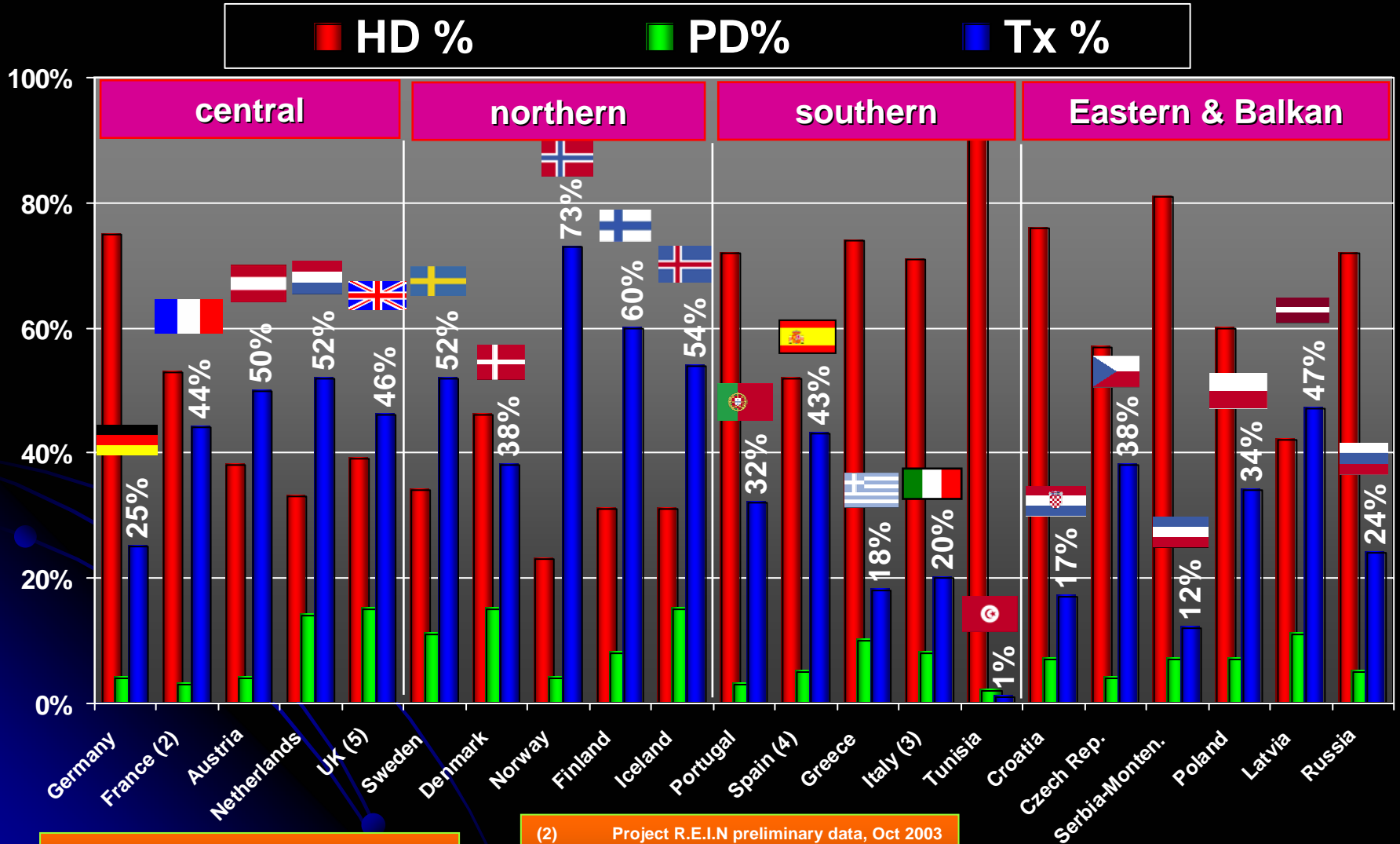
293,1 Mill. Population  
 Prev: 829 pmp  
**243.000 ESRD patients**

80% RRT in the EU

# ESRD in Northern, Southern & Central & Eastern Europe



# RRT in Northern, Southern & Central & Eastern Europe

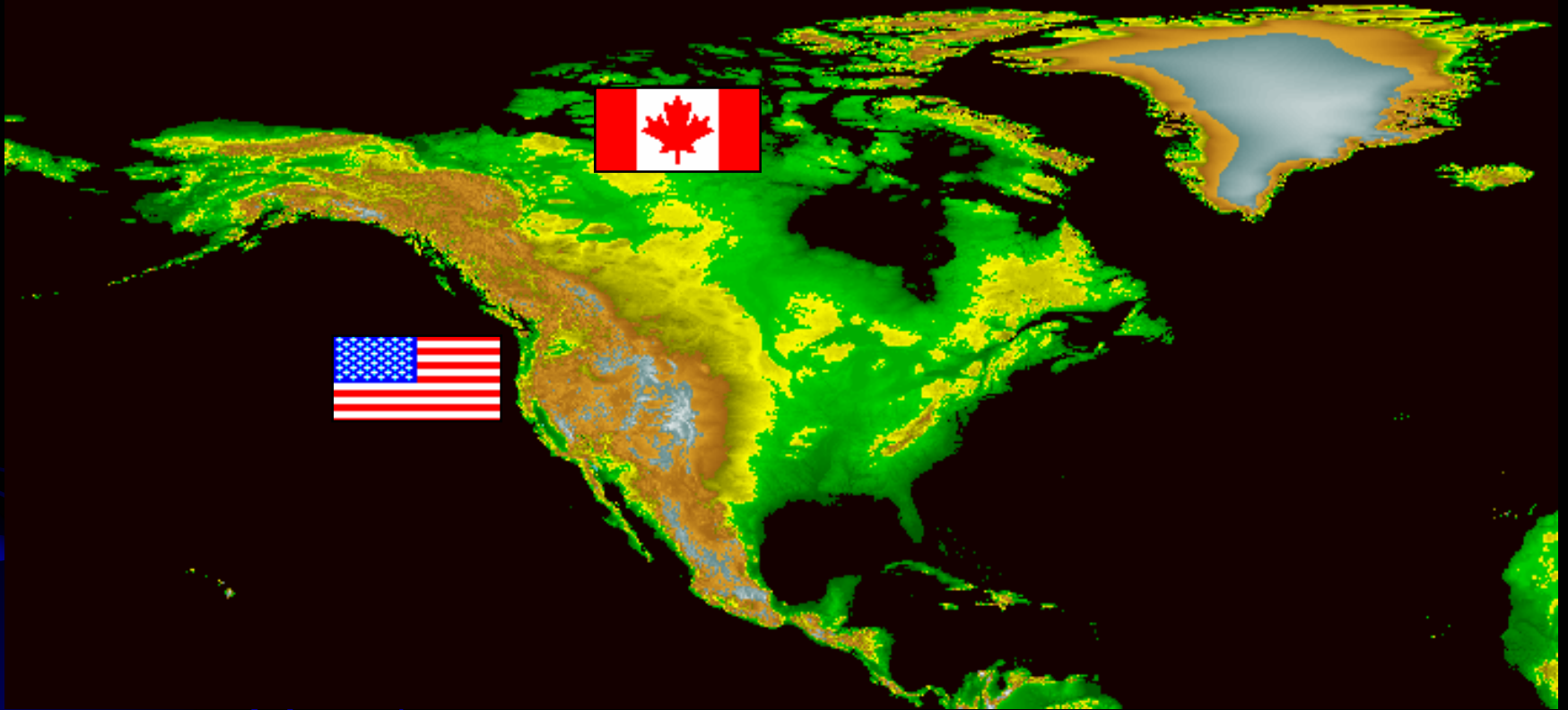


ERA-EDTA Register Report 2002





(2) Project R.E.I.N preliminary data, Oct 2003  
 (3) SIN-RIDT Report 2001  
 (4) Amenabar JJ, et al. Nefrologia 2002  
 (5) UK Renal Registry Report 2003 (prelim.)

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# ESRD in North America



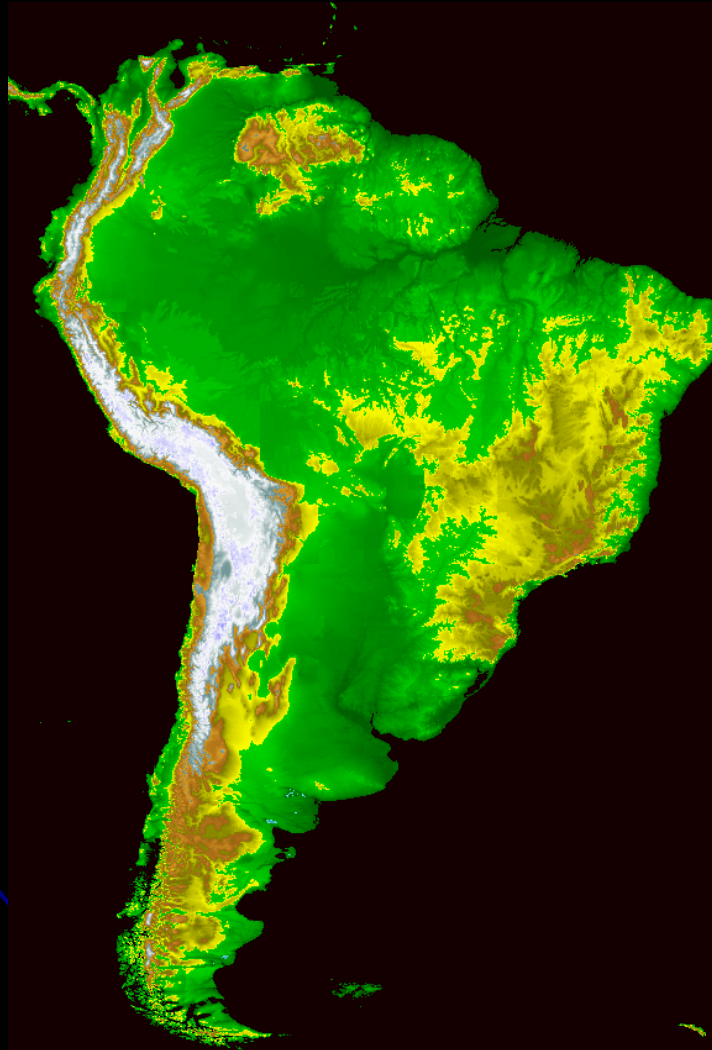
# RRT in North America - 2001

Country	Pop Mill.	ESRD incid. [pmp]	ESRD prev [pmp]	RRT [n]	HD %	PD %	Tx %
USA 	278	336	1.403	392.000	65,1%	5,9%	29%
Canada 	32	152	841	26.142	45,4%	13%	41,5%
For comparison:							
Tunisia - 2002 	9.7	112	539	5.230	97,1%	2,2%	0,7%
France - 2003 	63.8	122	798	50.000	53%	3%	44%

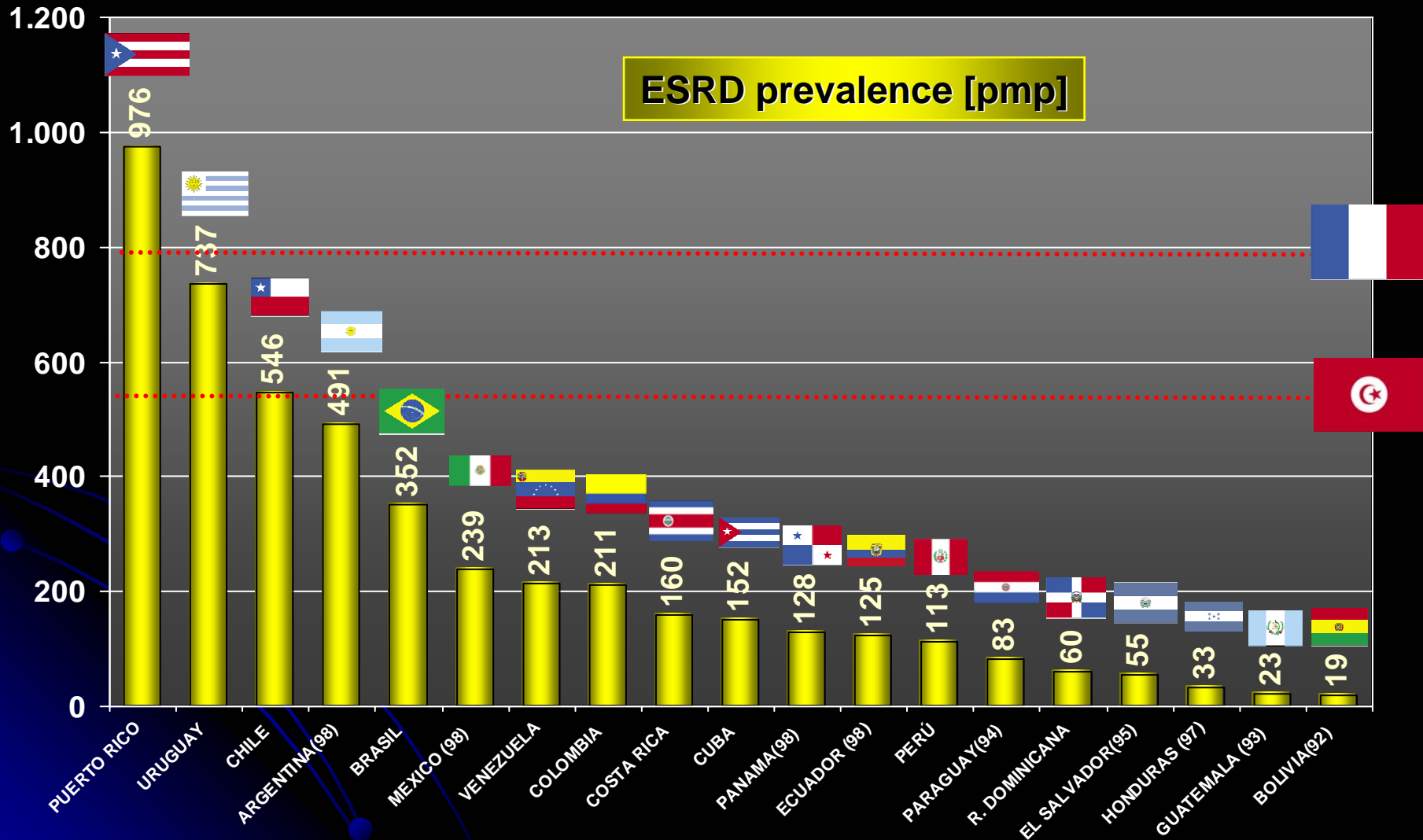
310 Million population  
 1.348 pmp  
**418.000 patients on RRT**

USRDS 2003 Report  
 CORR Prelim Report 2003

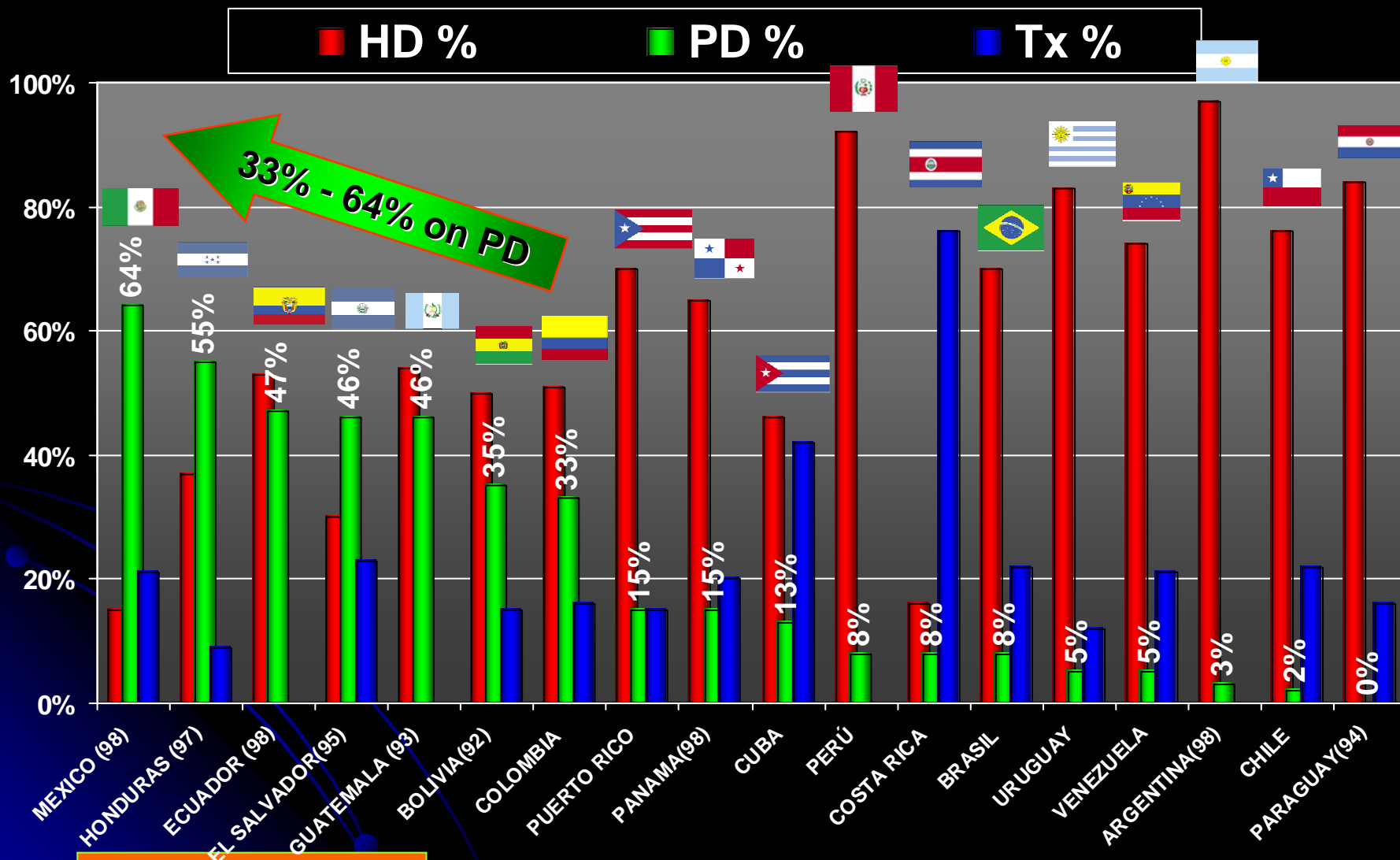
# ESRD in South & Latin America



# ESRD in Latin America - 1999



# ESRD - RRT in Latin America - 1999

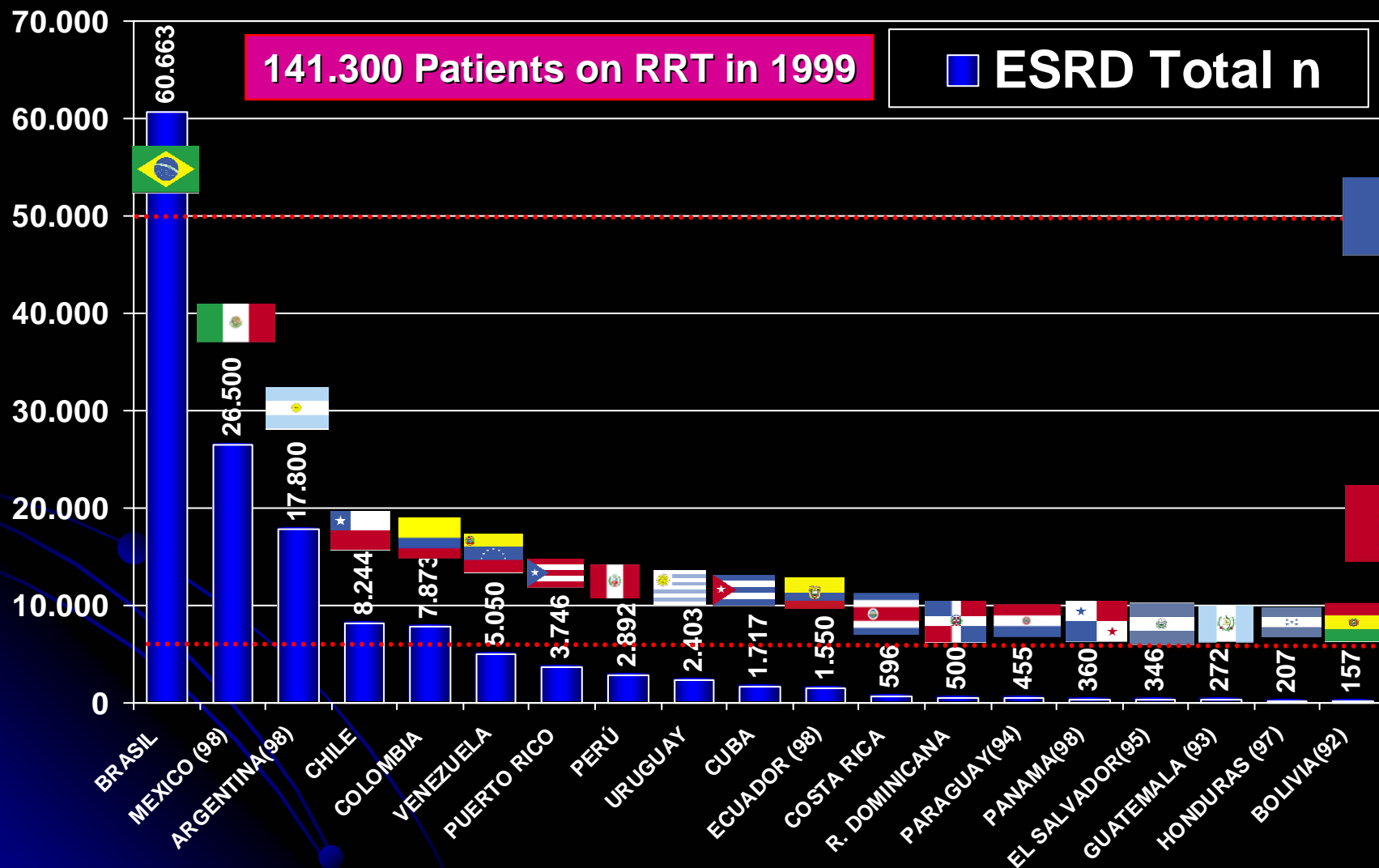


SLANH Report 2001

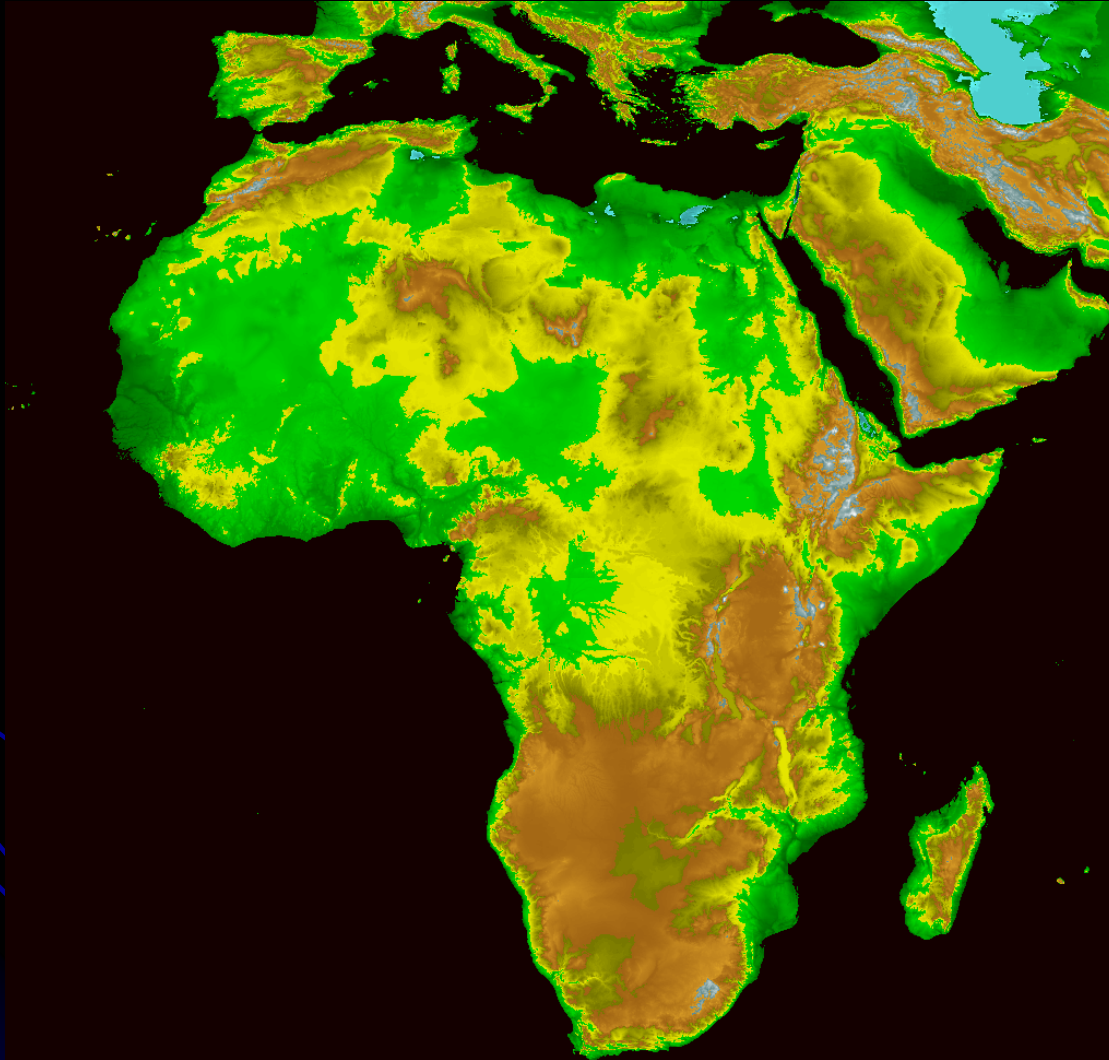
\*Year in ( ) if other then 1999

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# ESRD in Latin America – 1999 (n patients on RRT)



# ESRD in Africa



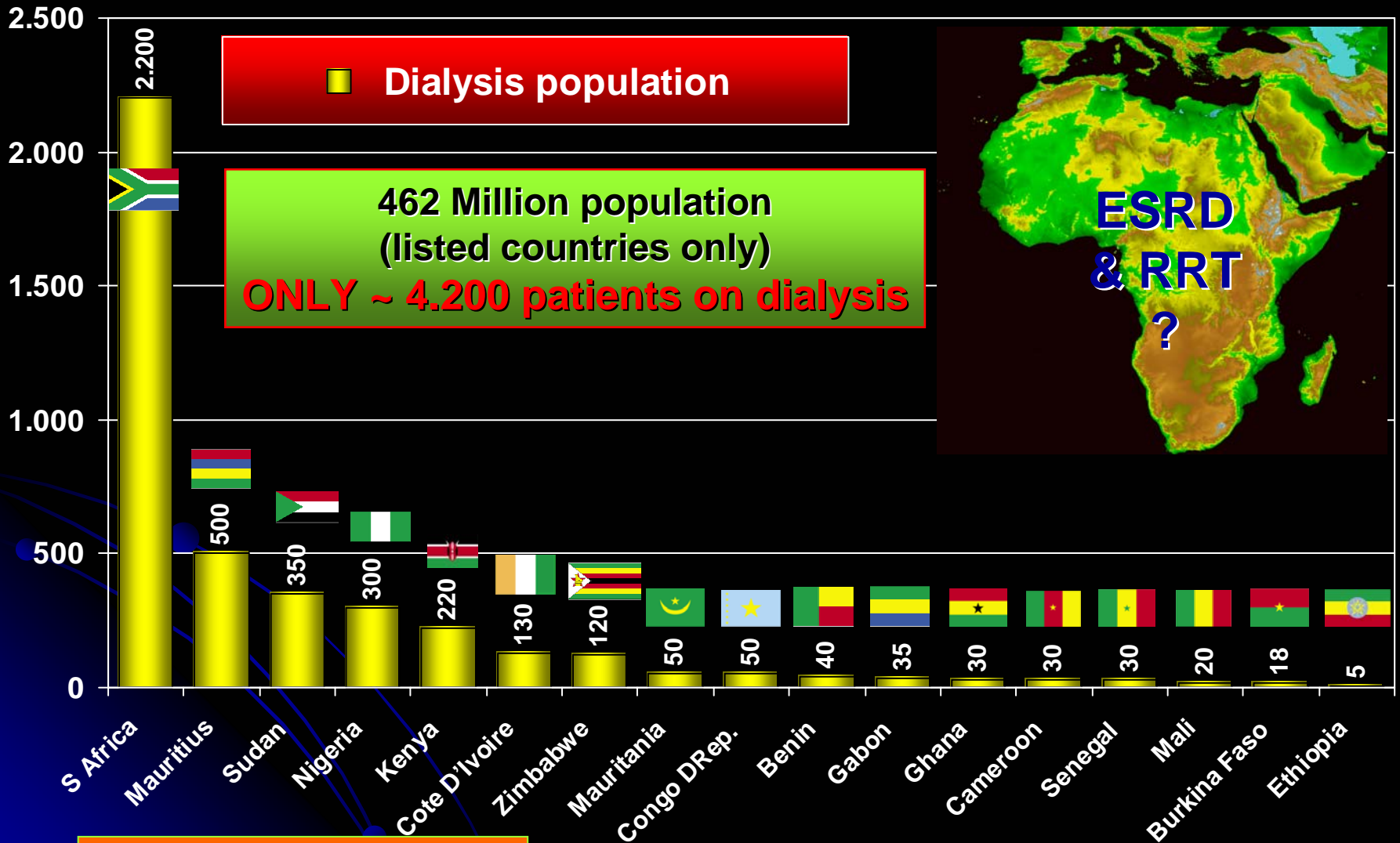
# RRT in North Africa

Country	Pop Mill.	ESRD incid. [pmp]	ESRD prev [pmp]	RRT [n]	HD %	PD %	Tx %
Algeria (1) 	30.4	34	79 (137) <sup>5</sup>	2.400 (4.000) <sup>5</sup>	98%	1%	1%
Egypt (2) 	63.8	75	314	20.000	82,5%	0,5%	~ 17%
Libya (1)-1993 	5.5	200 ?	84	465	40% ?		60% ?
Tunisia (3) 	9.7	112	539	5.230	97,1%	2,2%	0,7%
Morocco (1,4) 	28.7	60	70 (84) <sup>5</sup>	2.000 (2.300) <sup>5</sup>	91%	3%	6%

- (1) Barsoum R.S., Kidney International, 2003 suppl. 83
- (2) Afifi A. IFFR Conference 2001, San Francisco
- (3) ERA EDTA Registry Report 2002
- (4) Bourquia A, Nephrologie 1999
- (5) Maiz HB, Congres AV, SFAV & STN Tunis-G. 2004

**138 Million population**  
**210-220 pmp resp. 29-31.000 patients on RRT**

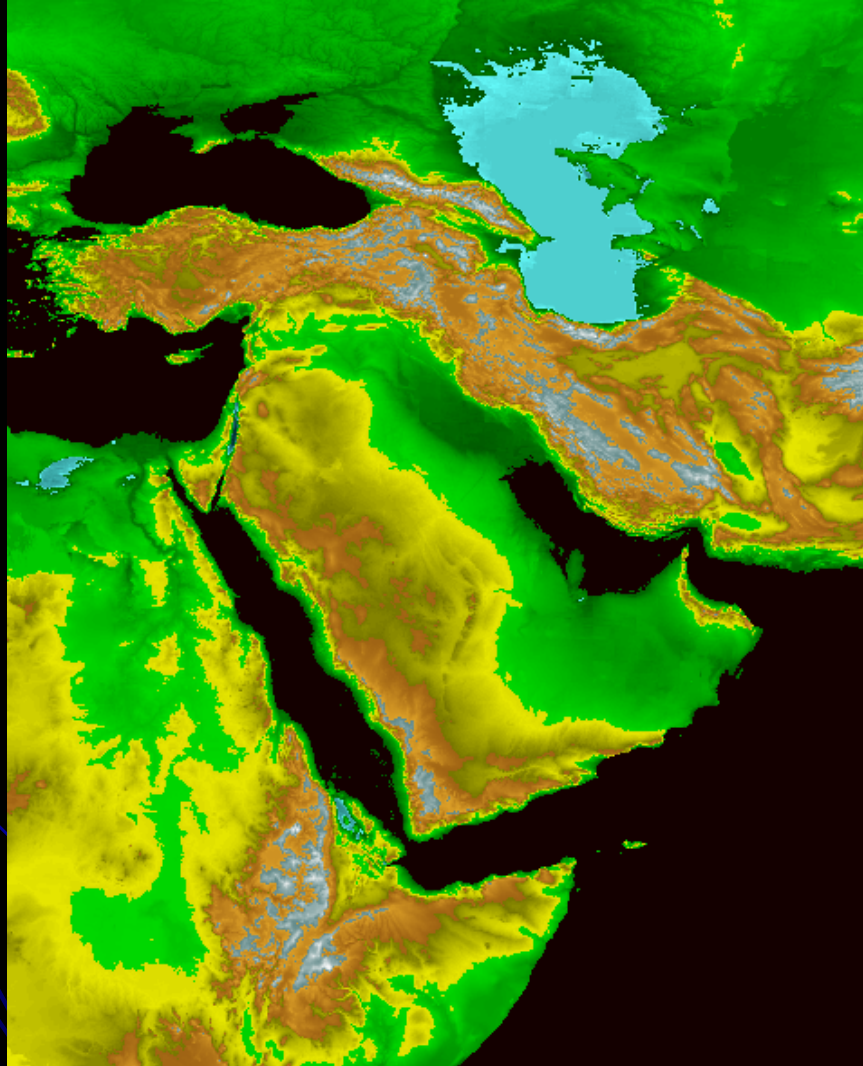
# RRT (Dialysis only) in Africa 2000 (excl. North Africa)





- Bamgboye EL, Kidney Int 2003 suppl. 83  
 - Fogazzi GB, Kidney Int 2003 suppl. 83  
 - Naicker S, Kidney Int 2003 suppl. 83

wm @ SFAV & STN Tunis-G., May 2004

# ESRD in the Middle East



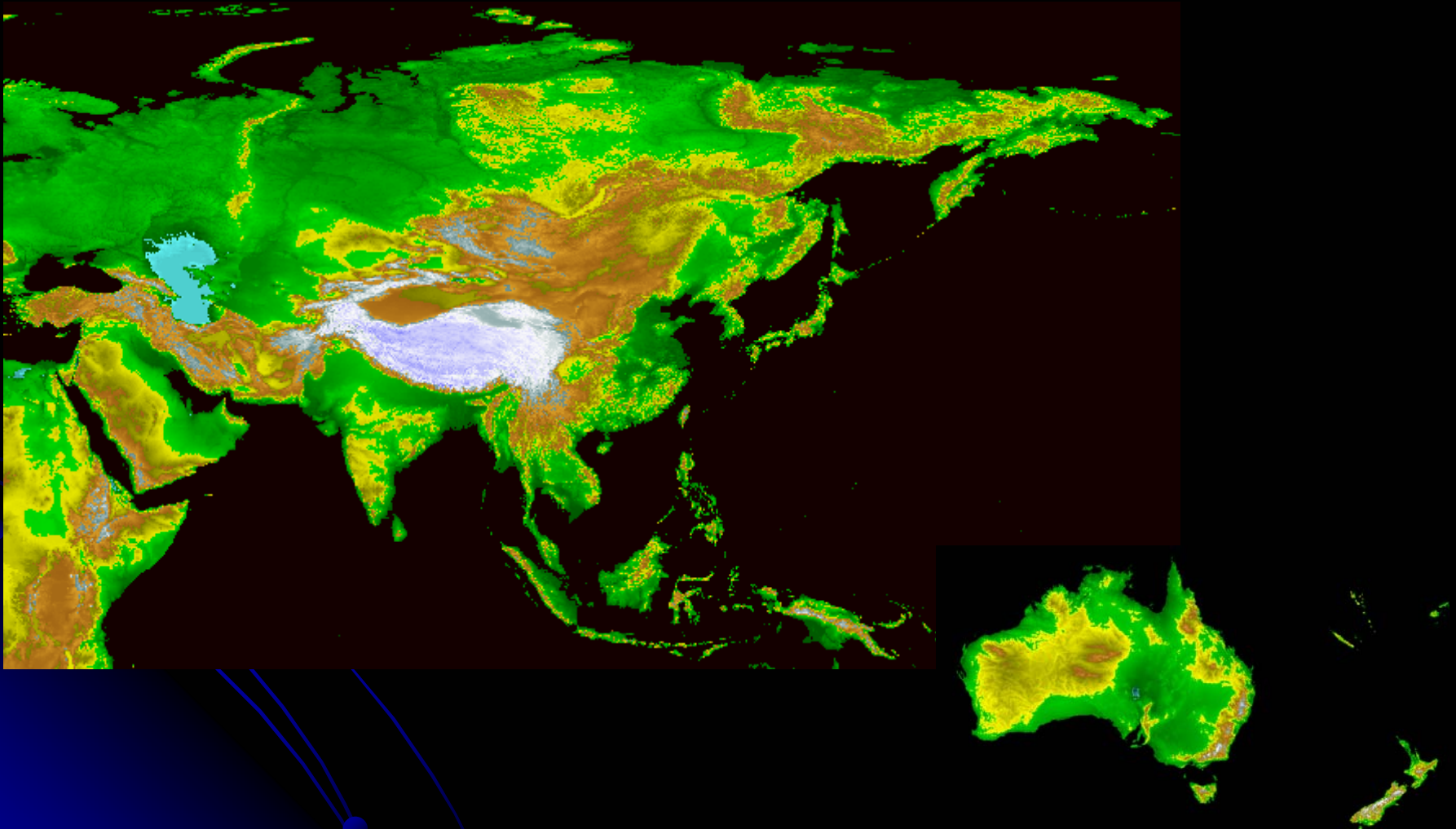
# RRT in Middle East (selected countries)

Country	pop Mill.	ESRD incid. [pmp]	ESRD prev [pmp]	RRT [n]	HD %	PD %	Tx %
Iran (1) 	63.6	50	238	15.150	53,7%	0,5%	45,5%
Egypt (2) 	63.8	75	314	20.000	82,5%	0,5%	~ 17%
Qatar (3) 	0.76	272	1.112	853	67,4%	1%	31,6%
Israel (4) 	5.9	nd	400	2.380	67%	17%	6%
Saudi Arabia (5) 	22.8	nd	330*	7.526*	93%*	7%*	nd

- (1) Haghighi A.N., NDT 2002
- (2) Afifi A. IFFR Conference 2001, San Francisco
- (3) USRDS 2003 Report
- (4) USRDS 2000 Report
- (5) www.scot.org.sa

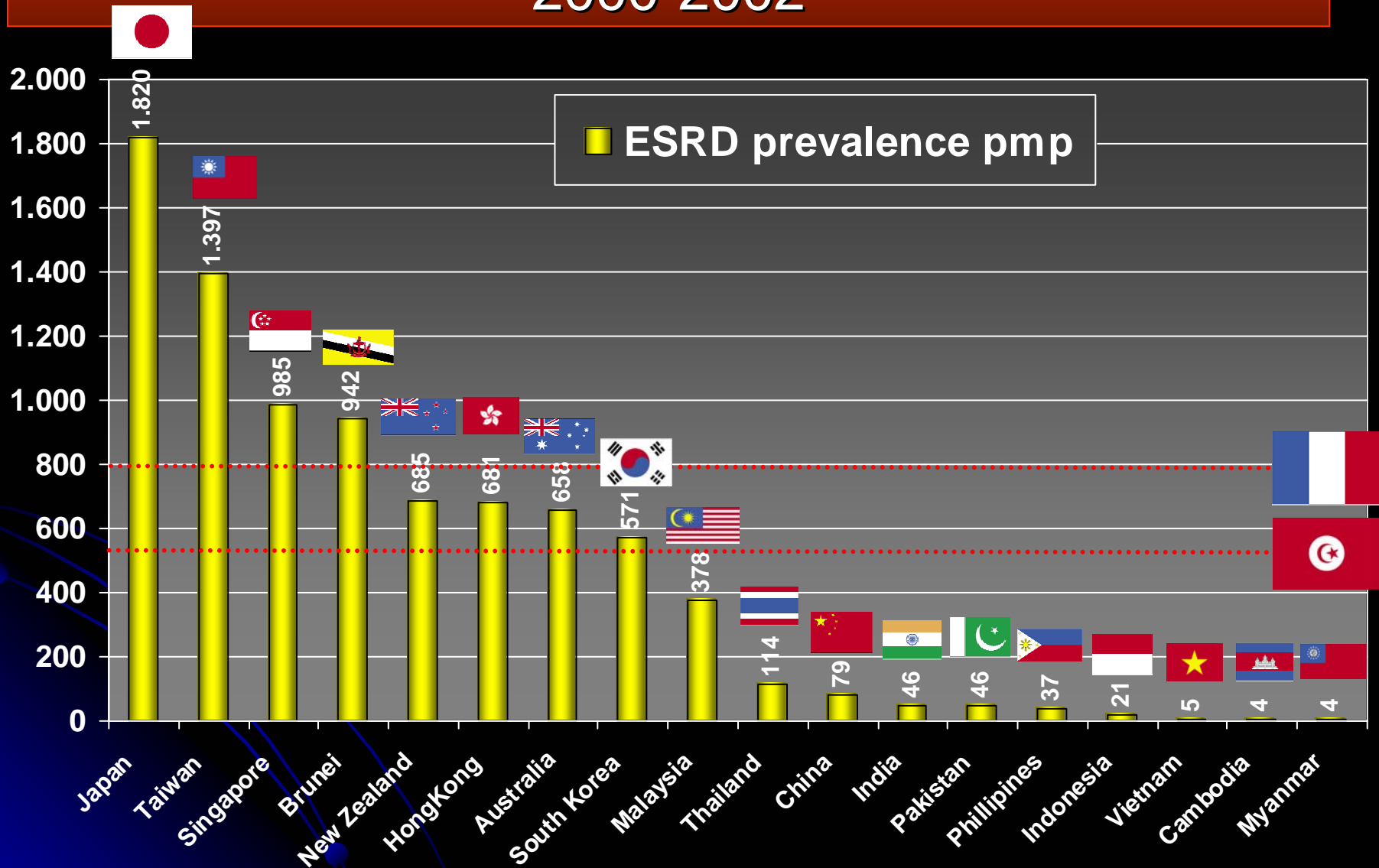
\*Saudi Arabia: dialysis only  
nd = no data

# ESRD in Asia, Japan and AUS/NZ



# ESRD in Asia / South East Asia & AUS/NZ

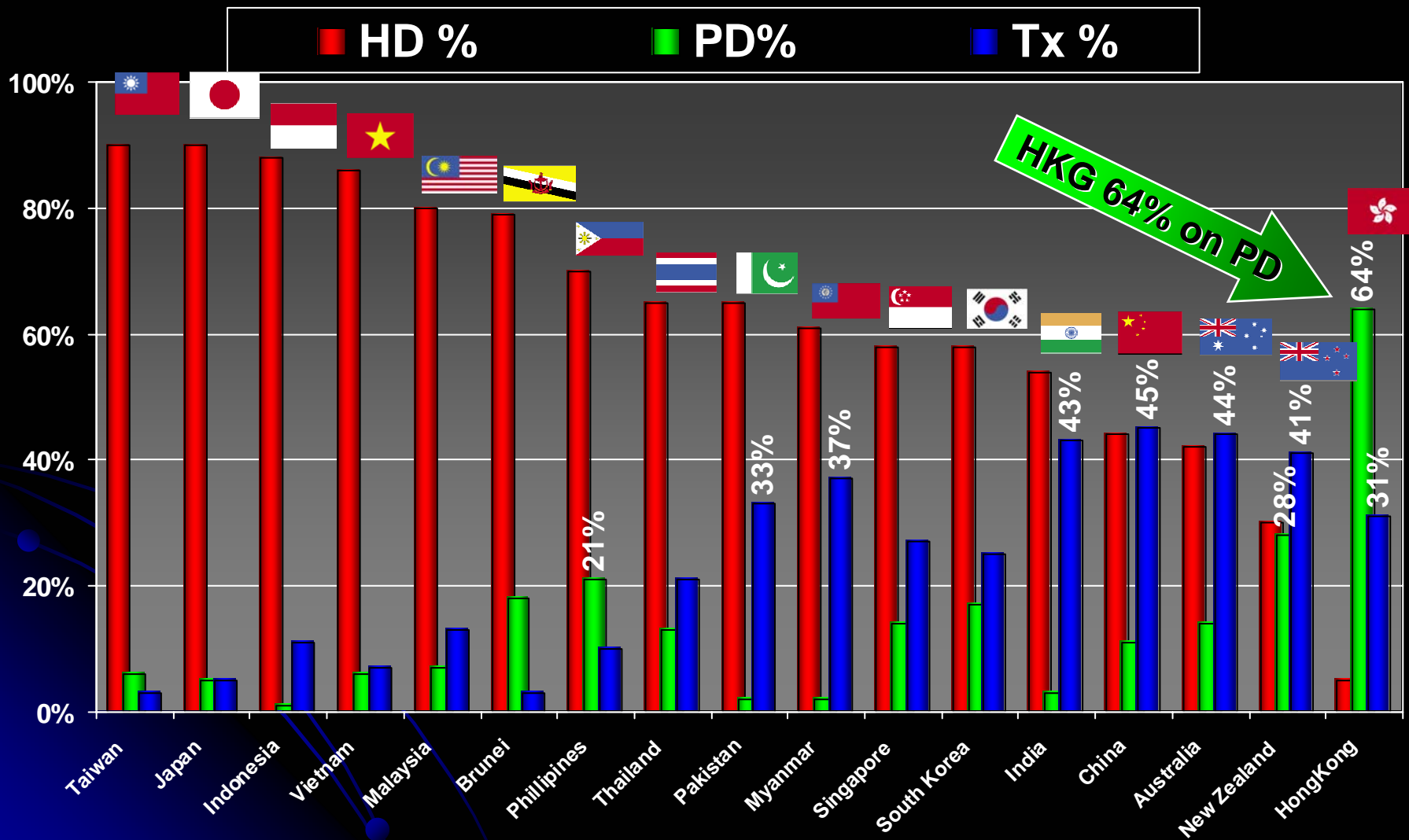
## - 2000-2002 -



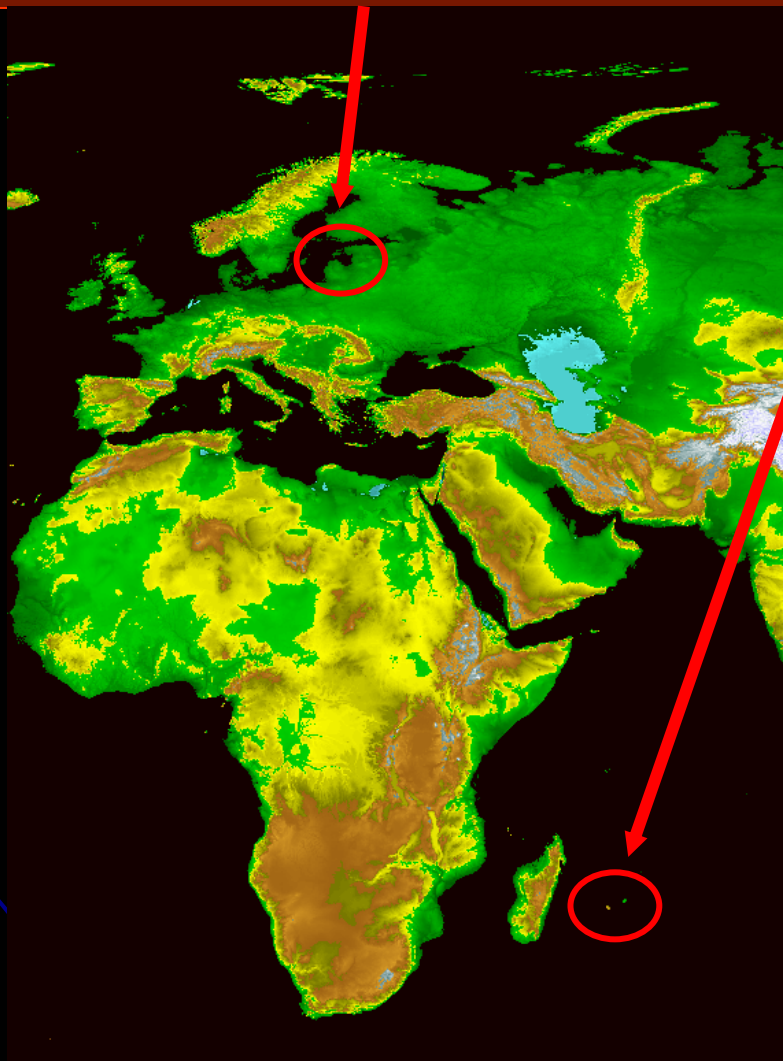
-Sitprija V, Kidney Int 2003 suppl. 83  
 -ANZDATA Report 2003 ANDUSRDS Report 2003

wm @ SFAV & STN Tunis-G., May 2004







# ESRD - RRT in Asia / South East Asia & AUS/NZ - 2000-2002 -



# RRT in Baltic countries & Reunion



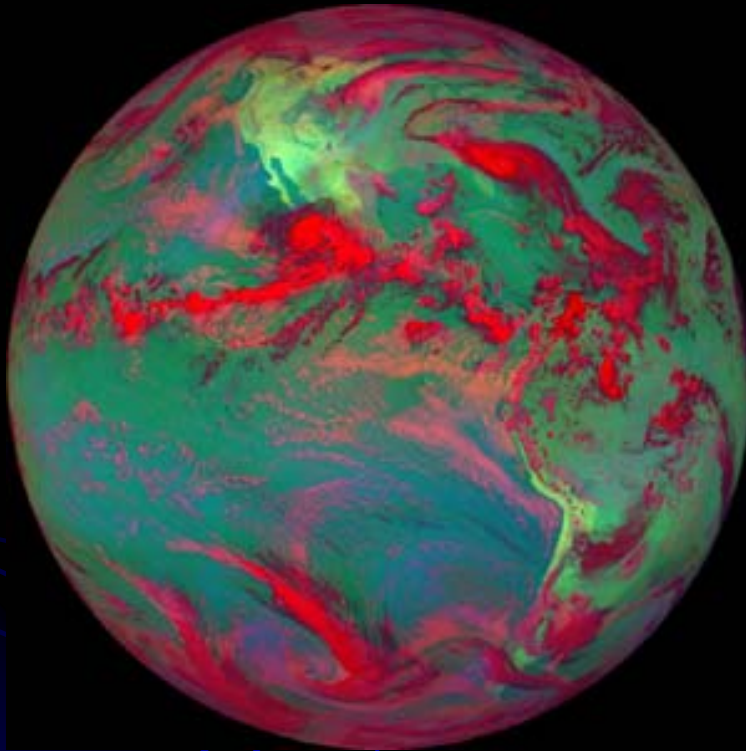
# RRT in Baltic countries (1999) & Reunion (1996)

Country	Pop Mill.	ESRD incid. [pmp]	ESRD prev [pmp]	RRT [n]	HD %	PD %	Tx %
Lithuania <sup>(1)</sup> 	3.7	100	213	789	60%	4%	36%
Estonia <sup>(1)</sup> 	1.4	46	186	261	29%	20%	51%
Latvia <sup>(1)</sup> 	2,4	56	172	413	45%	9%	46%
Reunion <sup>(2)</sup> 	0.66	188	1.175	767	83%	2,6%	14,3%
For comparison:							
Tunisia - 2002 	9.7	112	539	5.230	97,1%	2,2%	0,7%
France - 2003 	63.8	122	798	50.000	53%	3%	44%

- (1) Locatelli F, Nephrol Dial Transplant (2001)
- (2) Albitar S, Nephrol Dial Transplant (1998)
- (3) Tuppin P, Nephrologie (2004)

- French Overseas Territories (FOT)
- ESRD prev of 726 – 1.418 in 2000 (3)

# ESRD world wide distribution per region in 2001



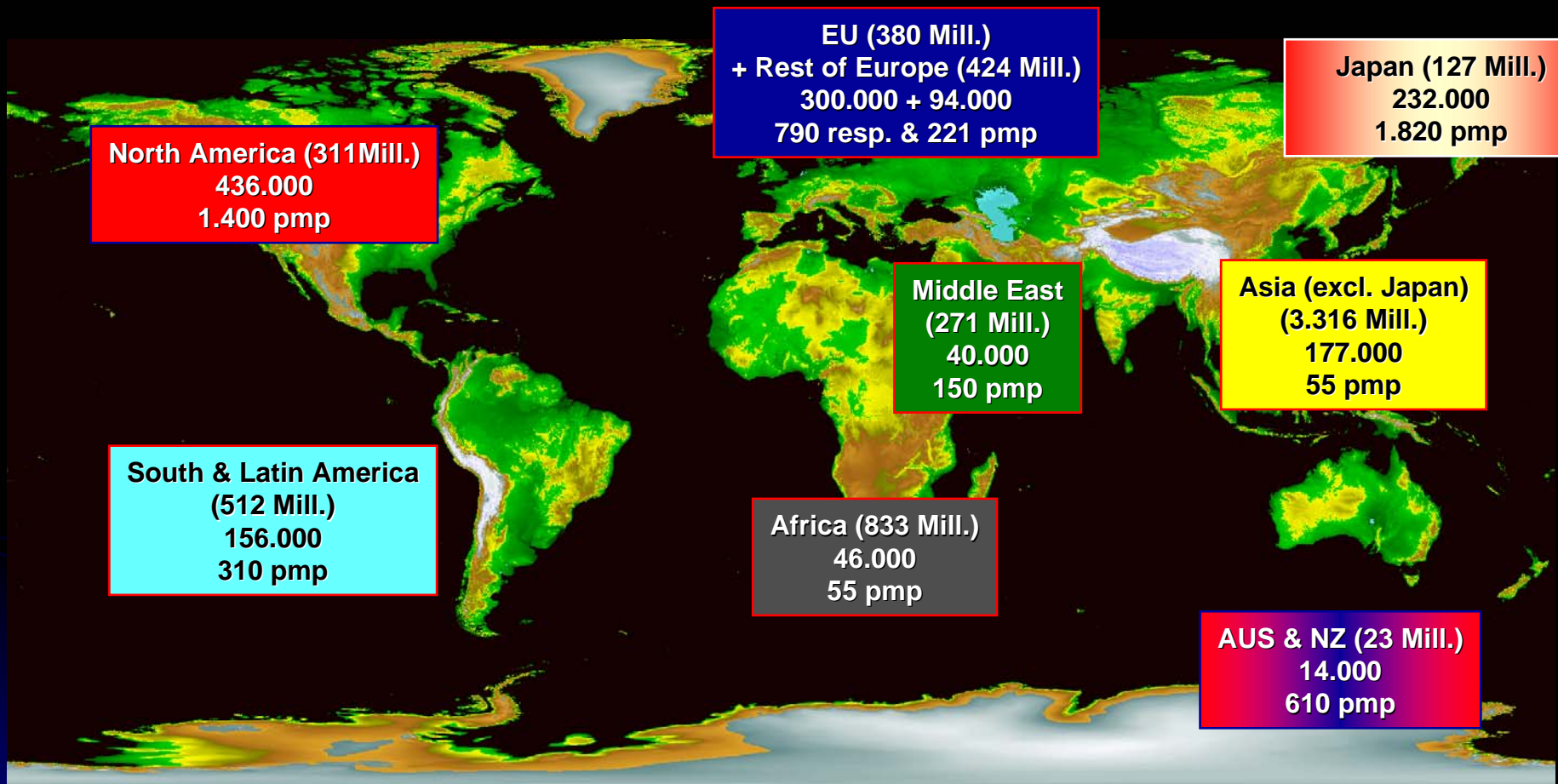
- Fresenius Medical Care
- Survey in 120 countries
- 5.7 Billion population
- 90% of the world population (99% of the ESRD population)

- **Moeller S, Gioberge S, Brown G.**  
ESRD patients in 2001: global overview of patients, treatment modalities and development trends  
Nephrol Dial Transplant (2002) 17: 2071-2076

# ESRD world wide distribution per region in 2001 (Moeller S, et al NDT 2002)

Region	Population [Mill]	ESRD prevalence [pmp]	ESRD Patients [n]
North America	311	1.400	436.000
Total Europe	804	490	394.000
European Union only	380	790	300.000
Japan	127	1.830	232.000
Asia (excl. Japan)	3.316	55	177.000
Latin America	512	310	156.000
Africa	833	55	46.000
Middle East	271	150	40.000
Global	6.190	240	1.479.000

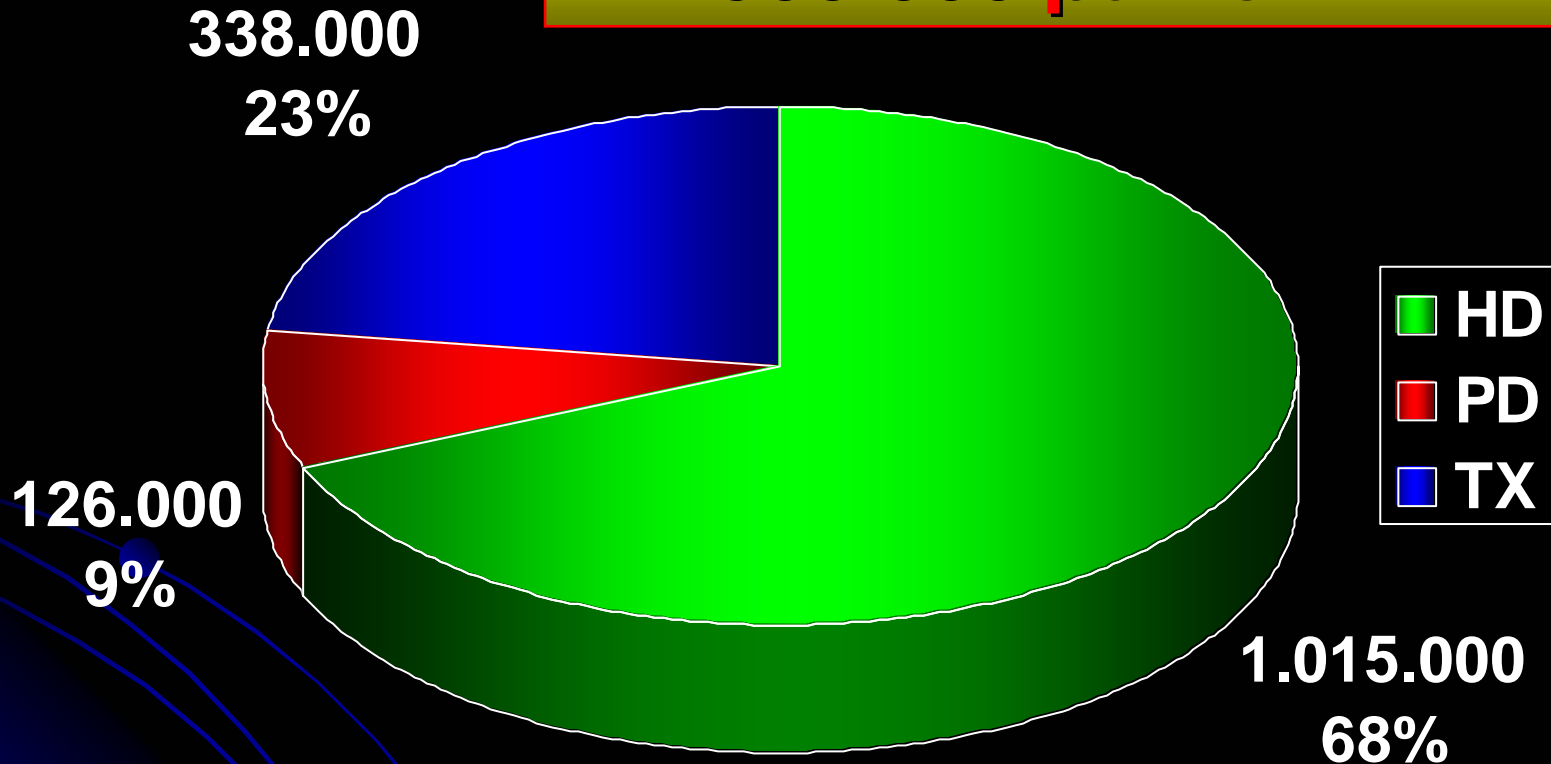
# ESRD population around the world – 2001 (questionnaire in 120 countries)



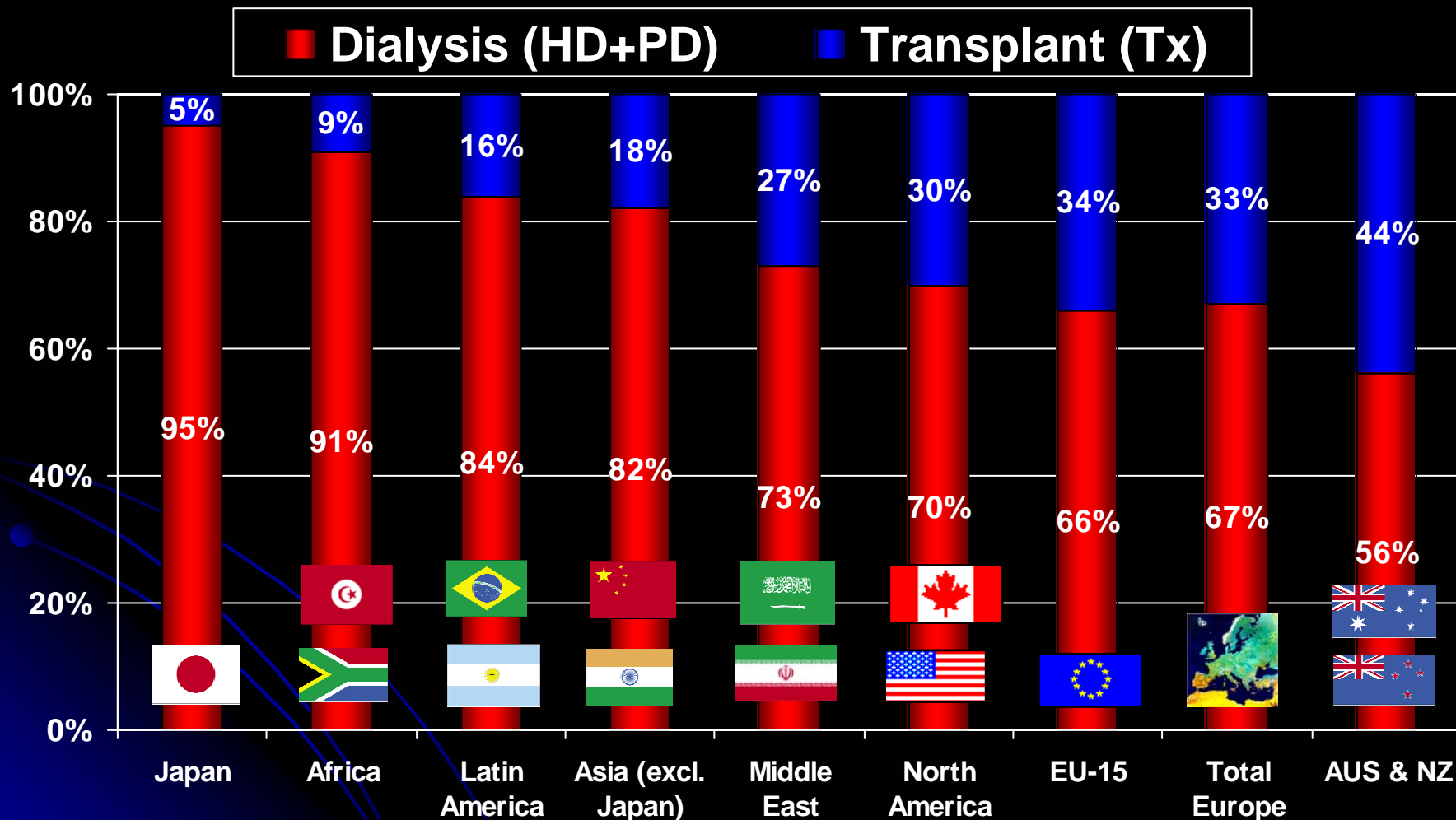
**~ 1.500.000 in 2001**

# ESRD Treatment Modalities - 2001

**~ 1.500.000 pat. on RRT**



# ESRD RRT treatment worldwide per region



- Data calculated from Moeller S., et al. NDT (2002) 17  
 - ANZDATA Report 2003 (for AUS & NZ)

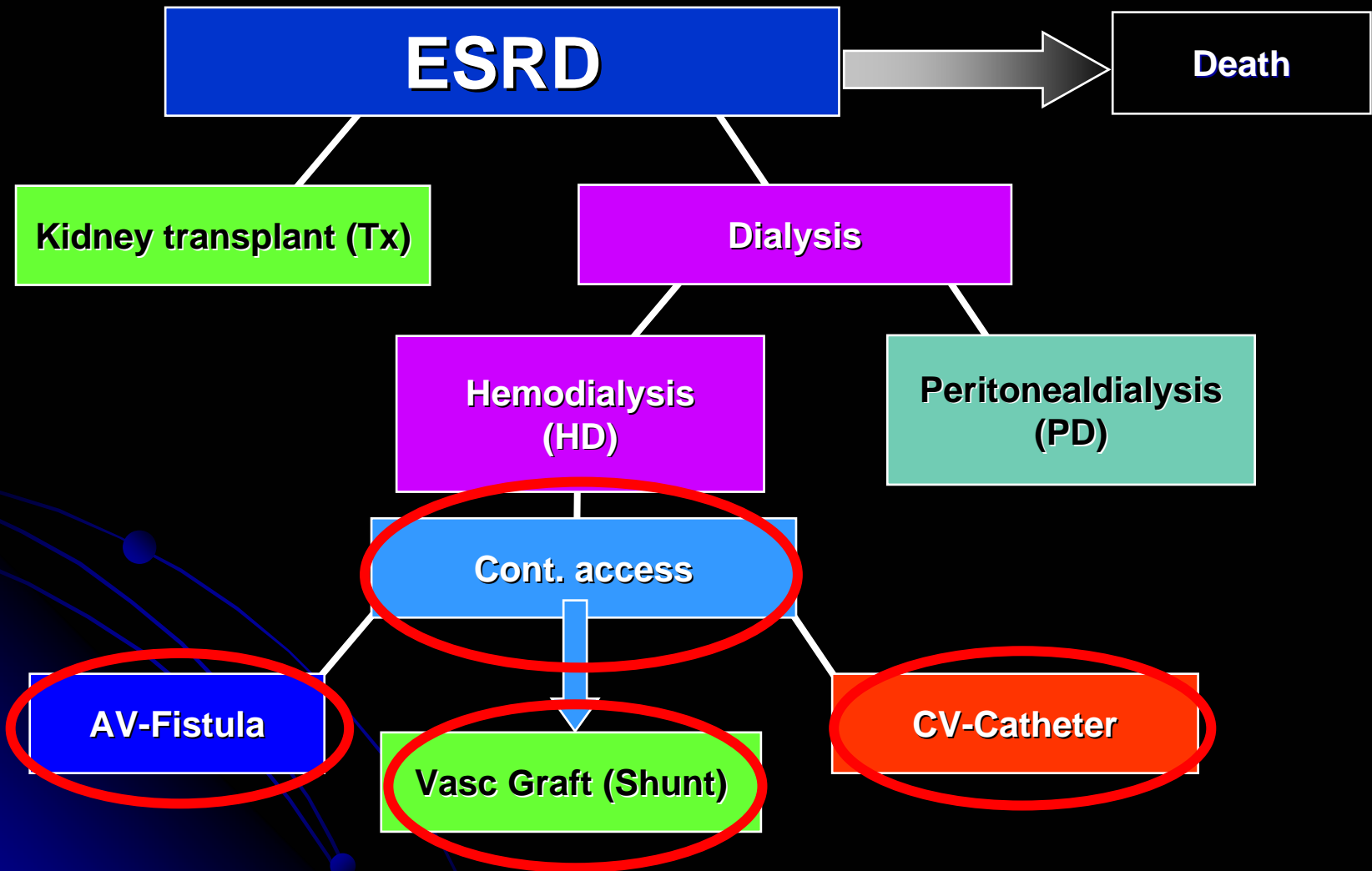
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# Factors influencing for the choice of ESRD treatment or RRT

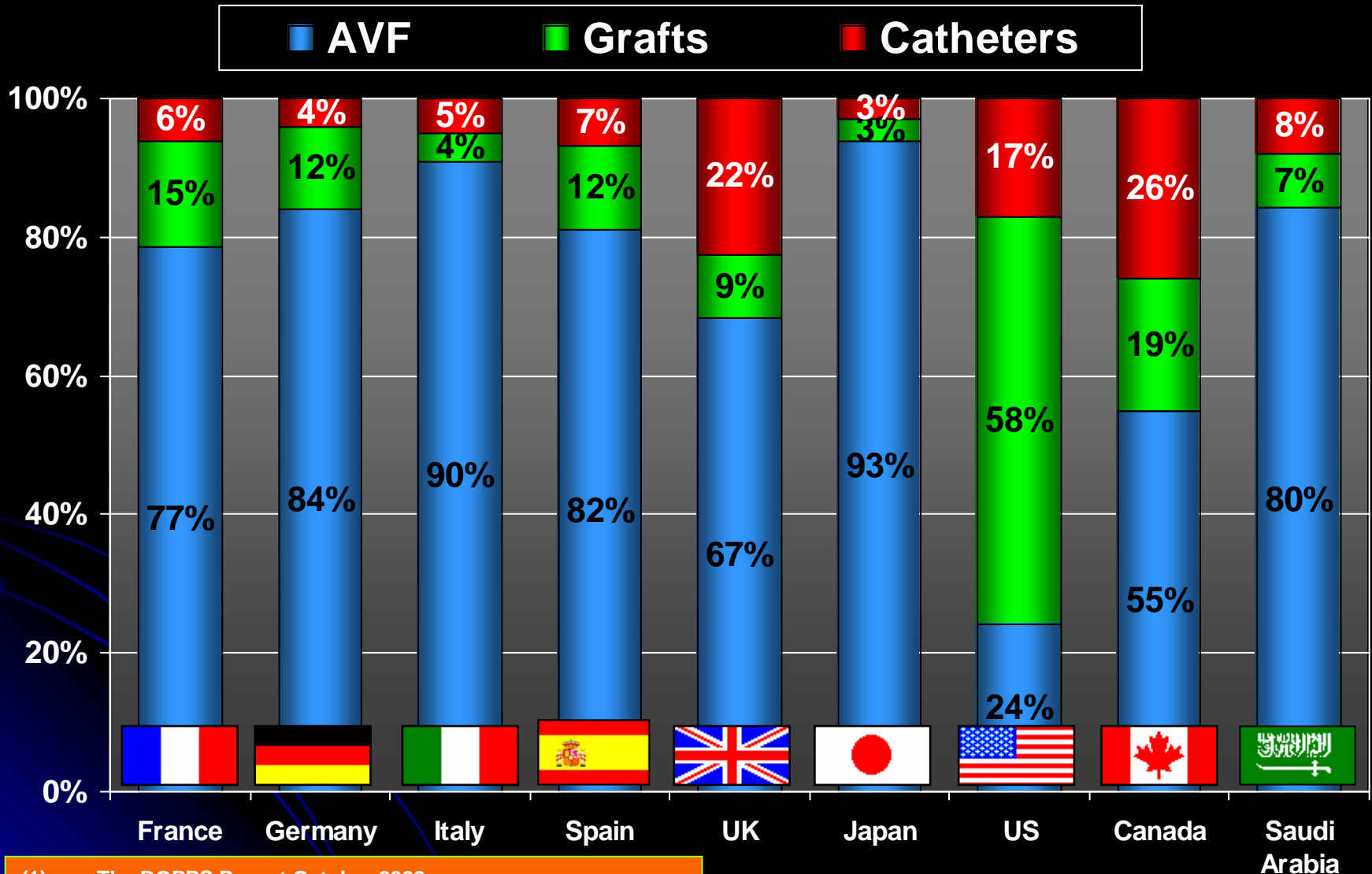
- Demographic and Co morbidities
  - Diabetic patients
  - Cardiovascular disease
  - Elderly patients (Age)
- Patients preference & Psychosocial factors
- Non-Medical Reasons
  - **FINANCIAL** / Reimbursement (Economic status)
  - Lack of training of nephrologists and nurses
  - Poor education of patients about options
  - Resources availability (PD fluid, Donor sources)
  - Cultural (ethical, religious)
  - Legal



# Dialysis Access type prevalence

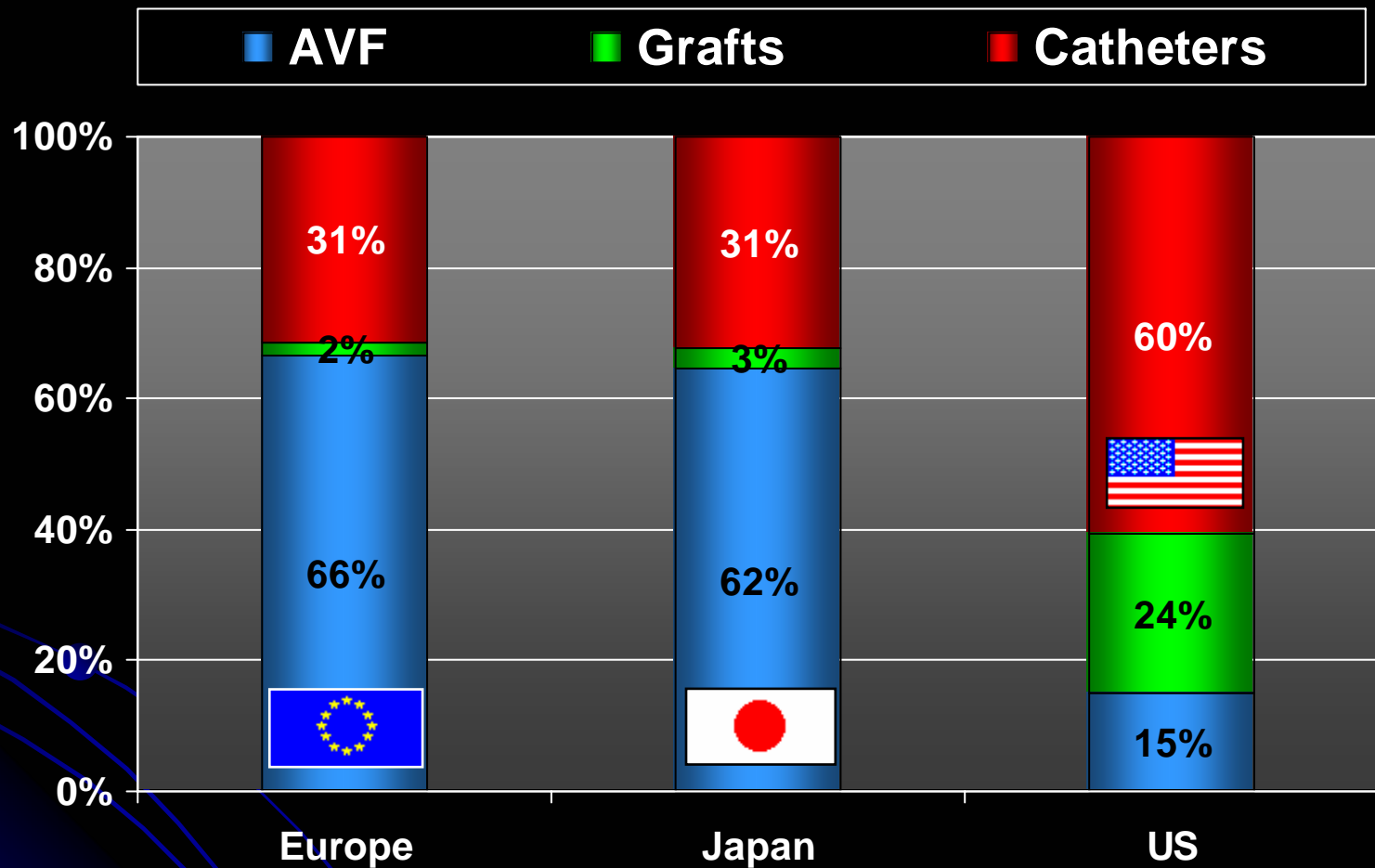


# Access type prevalence – DOPPS & CORR & SCOT



- (1) The DOPPS Report October 2002
- (2) CORR Report 2001
- (3) Saudi Arabian Soc Organ Transplant 2003 [www.scot.org.sa](http://www.scot.org.sa)

## Access type at Start of Hemodialysis – DOPPS



**Large differences in Access Use at Start of HD  
- Differences in Referral patterns ! -**

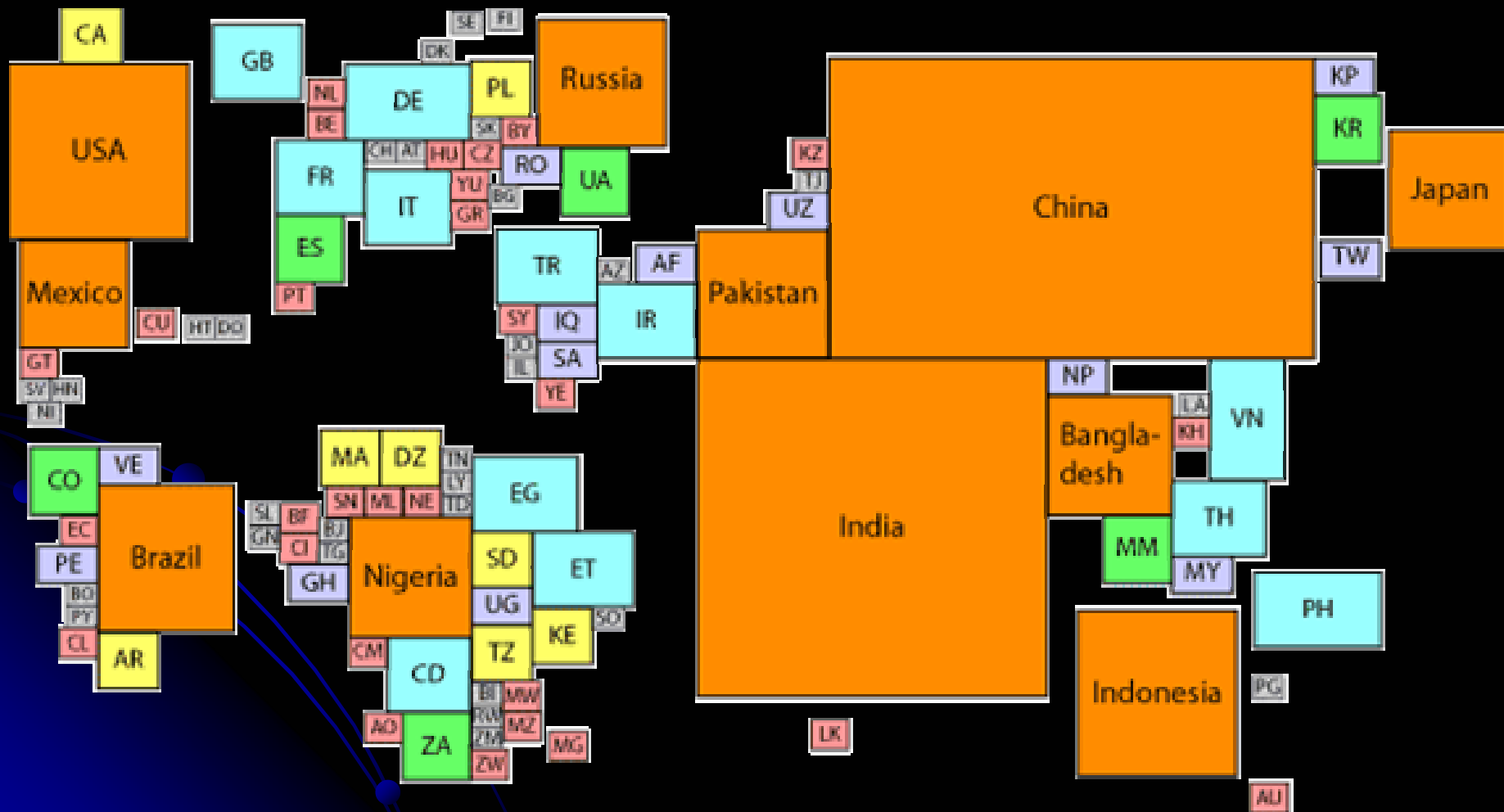
# Prevalence of RRT - THE FUTURE

# Prevalence of RRT - THE FUTURE

61% > 100 Mill. (11)

74% > 50 Mill. (12)

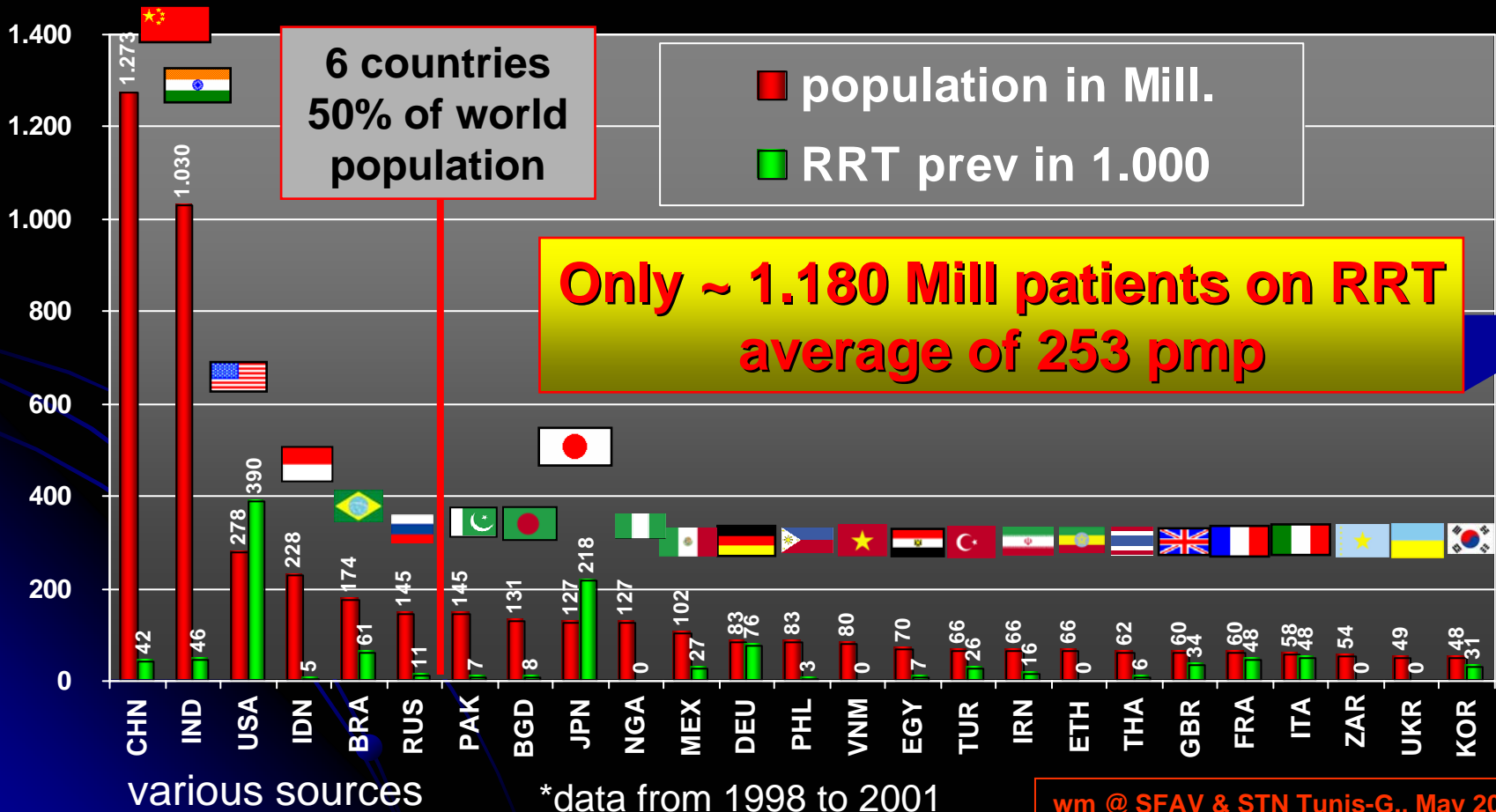
79% > 40 Mill. (6)



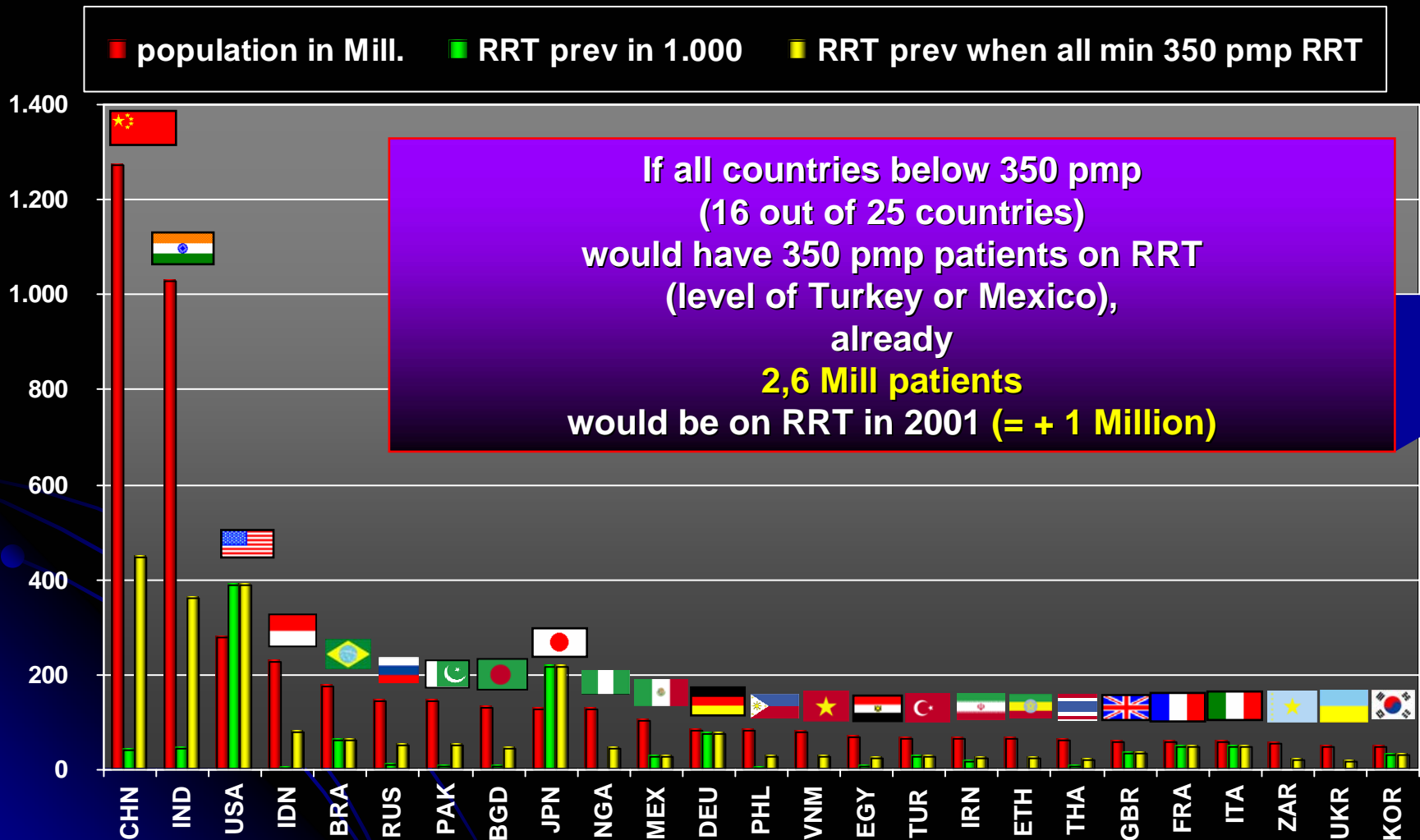
# RRT prevalence 25 largest countries in 2001\*

represent 76% of the world population (= 4.663 Mill.)

Only USA, Japan and DEU, GBR, FRA, ITA & KOR, with significant RRT



# RRT prevalence 25 largest countries in 2001\*

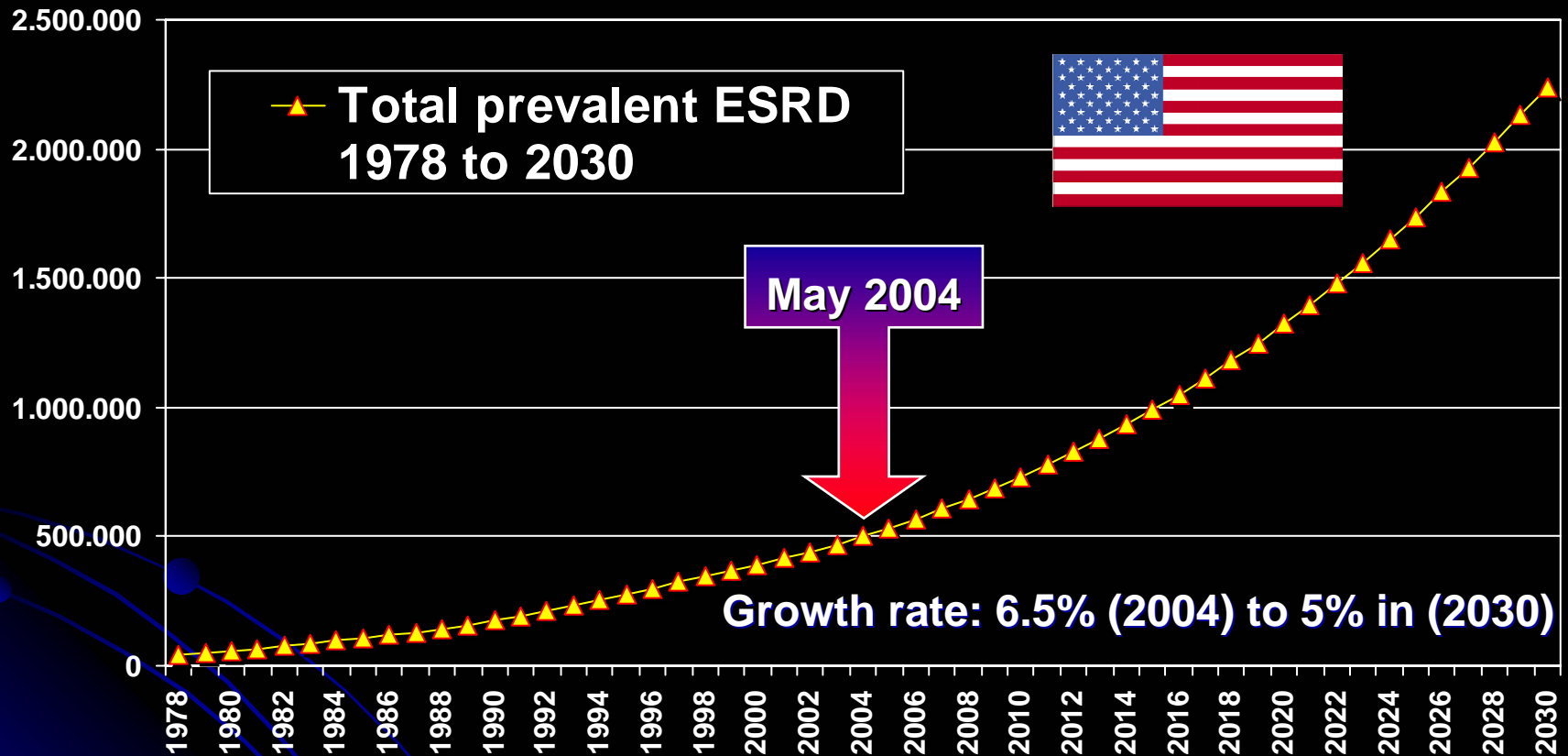


various sources

\*data from 1998 to 2001

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# The future growth of ESRD - USA

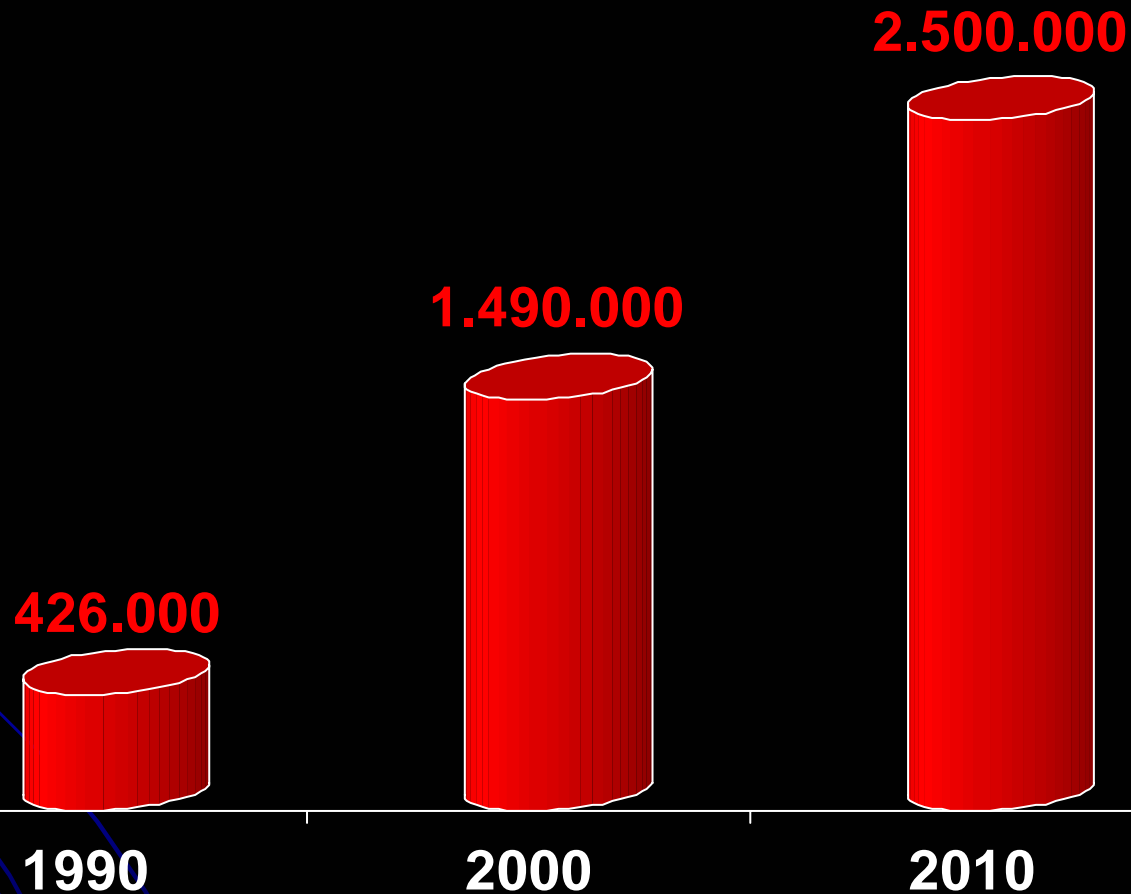


In 2030 **2,236 Million** ESRD patients in the USA

USRDS Report 2003

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# Global Dialysis Population 1990 - 2000 - 2010



Lysaght, J Am Soc Nephrol 2002

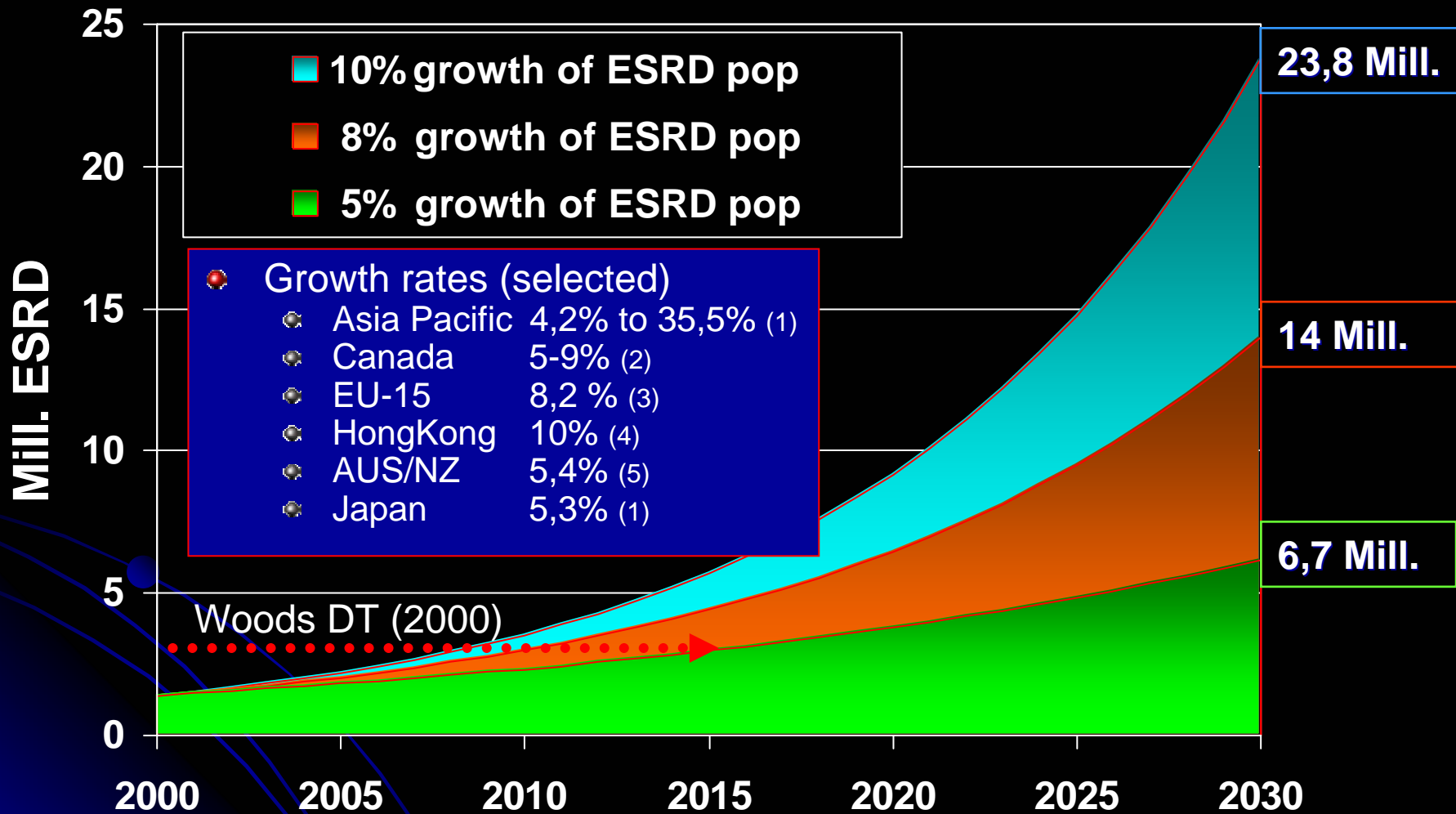
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# Prevalence of RRT - THE FUTURE

In 2015 approx. 3 Mill. Patients  
will be on RRT  
(5% growth p.a)

The number of HD patients  
in Asia pacific will then exceed the  
ROW  
(approx. 1,3 Mill each)

# The future growth of ESRD - worldwide



- (1) Lee G, Seminar in Nephrologie (2003)
- (2) CORR prelim. Report 2002
- (3) Briggs JD, Kidney International (2000)
- (4) Liu SF, HongKong J of Nephrol (1999)
- (5) ANZDATA Report 2003

# Conclusion 1

- ESRD is a steadily increasing disease around the world
- Great differences in the underlying disease
- Increasing diabetic nephropathy
- Incidence and prevalence rates and treatment modalities differ around the world due to various reasons
  - Demographic and Co morbidities
  - Patients preference & Psychosocial factors
  - **Non-Medical Reasons**
    - Financial / Reimbursement (Economic status)
    - Lack of training of nephrologists and nurses
    - Poor education of patients about treatment options
    - Resources availability (PD fluid, Donor sources)
    - Cultural (ethical, religious)
    - Legal

## Conclusion 2

- Health care institutions and politicians must establish ESRD-research, -educational, -supportive, and preventive programs
- **Set up mandatory RRT registers and other sources**
- National and international congresses on ESRD to exchange experiences regarding the different treatment modalities
- **Cooperation with the medical industry to find new and improved ways for better treatment of ESRD**

An iceberg floating in the ocean. The tip of the iceberg is above the water line, while the vast majority of the iceberg is submerged below the surface. A large, pink, dashed arrow points downwards from the tip of the iceberg towards the bottom of the frame, indicating a progression or growth over time.

**ESRD 2004**

**ESRD 2010**

**ESRD 2015**

**ESRD 2020**

**ESRD 2025**

Merci de votre attention