Progression of RRT in PLWH

Wisit Prasithsirikul,MD
Bamrasnaraduara ID Institute
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- CKD in Thai PLH
- Choice of RRT in Thai PLH
- Epidemiology of PLH in dialysis facilities
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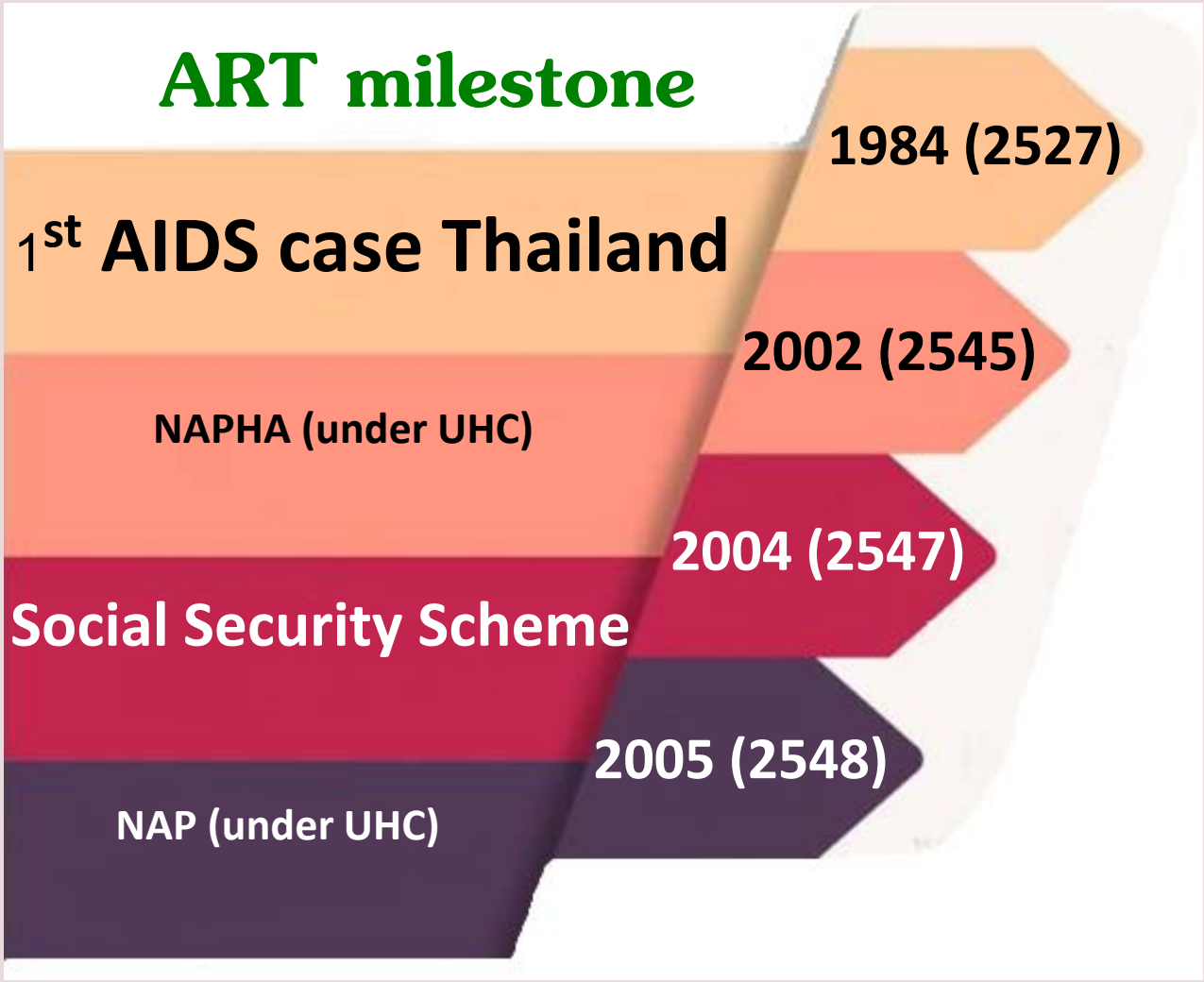
- KT and PLH

HIV/AIDS

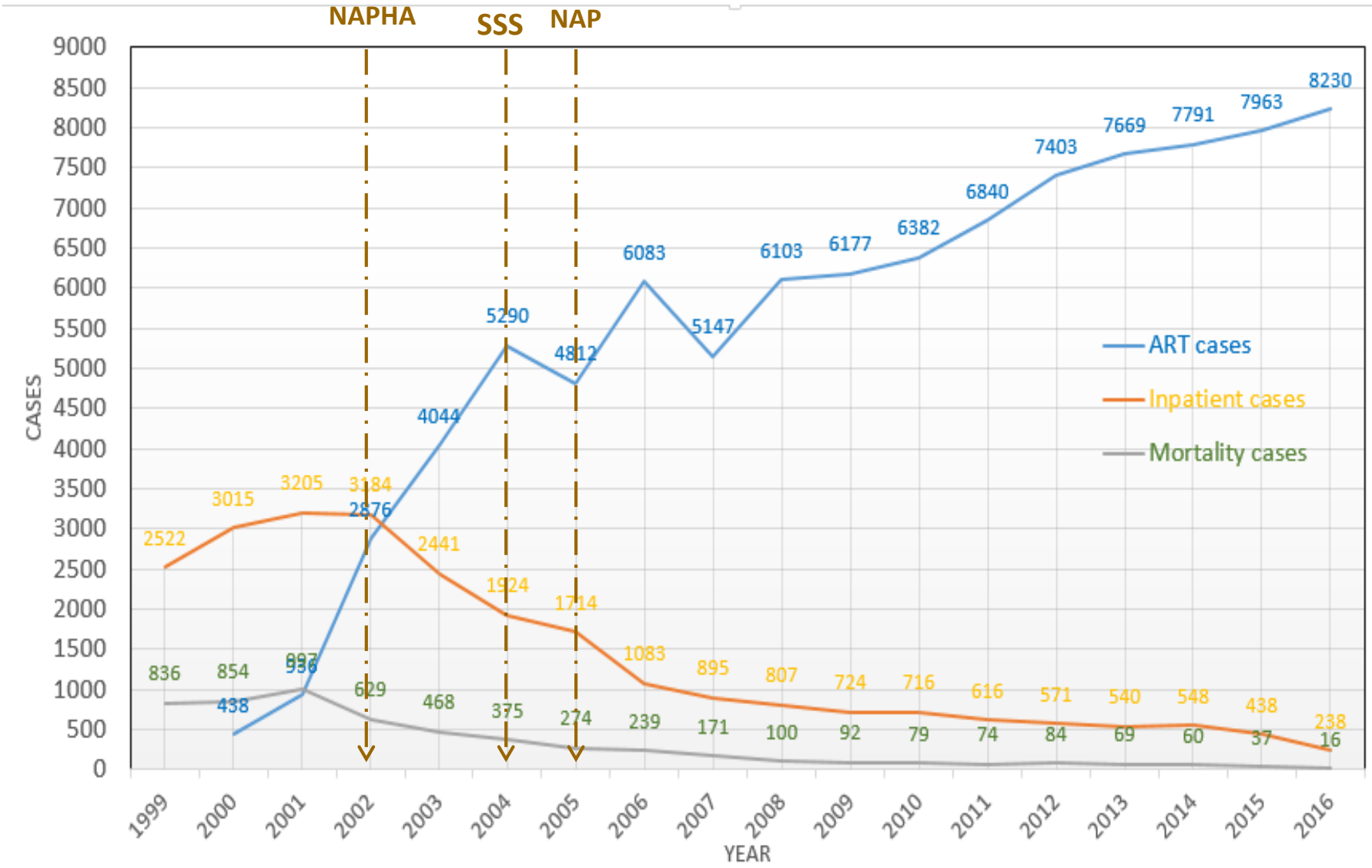

ART milestone
1984 (2527)
1st AIDS case Thailand
2002 (2545)
NAPHA (under UHC)
2004 (2547)
Social Security Scheme
2005 (2548)
NAP (under UHC)

เมรุเผาศพ

ผังโรงพยาบาลบำราศ๒๕๐๓

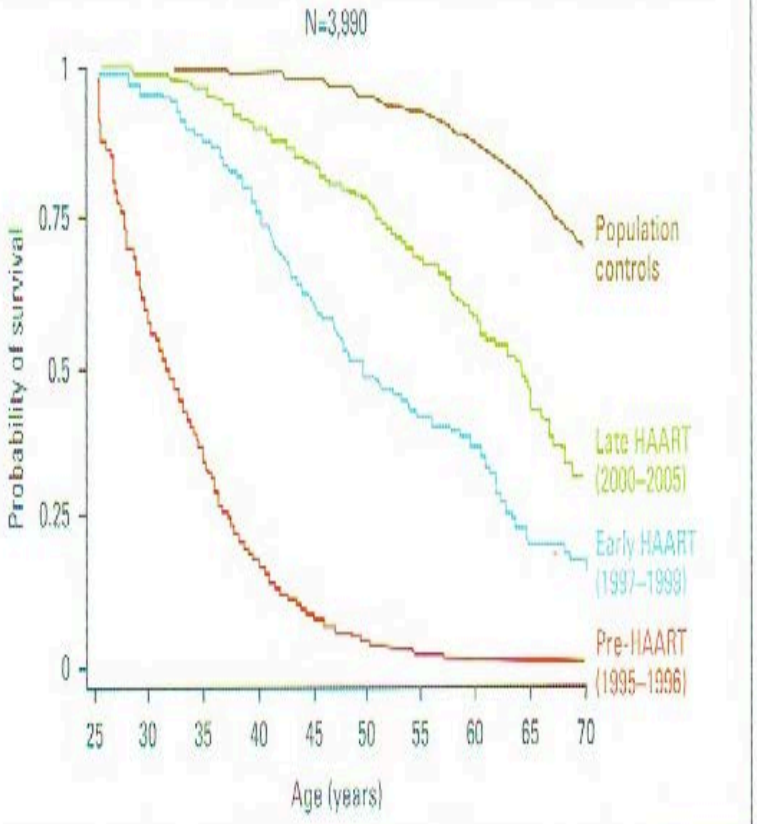
ตึกเฉลิมพระเกียรติ

ART, Mortality and IPD cases in BIDI 1999-2016



The average life expectancy of HIV-infected patients is still shorter than that of HIV-negative age- and gender-matched controls[8,9,126]

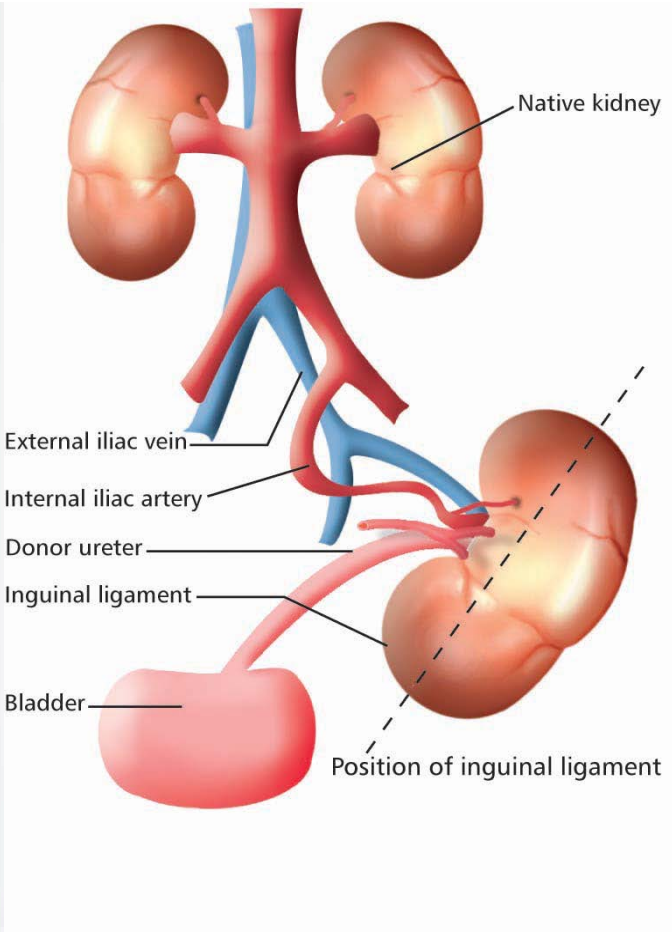
Figure 12: Survival after age 25 years for HIV-1-infected patients is significantly lower than for the general population, even in the late HAART era[9]



Adapted from Lohse N, *et al. Ann Intern Med* 2007; 146:87–95.[9]

Table 2: Life expectancy of HIV-1-infected patients in the HAART era remains shorter than that of HIV-negative age- and gender-matched controls

Cohorts(s)	Country	Patient population *Time period*	Key findings
APROCO (AntiPROtéase COhorte) and Aquitaine[8]	France	2,435 HIV-infected patients *1997–2005*	• Age- and gender-adjusted overall mortality remained sevenfold higher in HIV-infected adults than in the general population
DHCS (Danish HIV Cohort Study)[9]	Denmark	3,990 HIV-infected patients *1995–2005*	• Median survival after age 25 years for HIV-infected patients overall was only 20 years, compared to approximately 51 years in the general population • For HIV-infected, HCV-negative patients observed during the period 2000–2005, median survival past 25 years was still only 39 years
CASCADE (Concerted Action on SeroConversion to AIDS and Death in Europe)[126]	Europe, Canada, Australia	7,680 HIV-infected patients with known dates of seroconversion *Up to 2003*	• Despite similar mortality to the general population in the initial 5 years from seroconversion, a mortality excess remained over the longer term (5.2% in the first 10 years following seroconversion among patients 15 to 24 years of age)


Native kidney
External iliac vein
Internal iliac artery
Donor ureter
Inguinal ligament
Bladder
Position of inguinal ligament

CONCISE COMMUNICATION

AIDS 2018Vol32No3

Chronic kidney disease incidence and survival of Thai HIV-infected patients

Wannarat Pongpirul[a], Krit Pongpirul[b,c], Jintanat Ananworanich[d], Virat Klinbuayaem[e], Anchalee Avihingsanon[d] and Wisit Prasithsirikul[a]

Table 1. Patient characteristics by study sites.

	Overall	BIDI	HIV-NAT	Sanpatong
N	5430	3319	1312	799
Age (years)	39.96	40.42	37.50	42.08
Female	41.49%	41.97%	38.64%	44.18%
CDC category				
A	28.88%	15.28%	54.99%	44.52%
B	18.52%	13.58%	31.38%	19.23%
C	52.60%	71.14%	13.63%	36.25%

Table 2. Baseline characteristics by study sites.

	Overall	BIDI	HIV-NAT	Sanpatong	*P*
Baseline eGFR (ml/min/1.73 m^2)	104.93	107.74	96.78	109.36	<0.001
$CD4^+$ cell count (cells/μl)	386.55	363.66	465.84	351.25	<0.001
$CD4^+$ cell count ≤200 cells/μl (%)	22.52	23.74	15.47	29.04	<0.001
HIV RNA viral load (log_{10} copies/ml)	4.34	4.52	3.91	4.62	<0.001
HIV RNA viral load ≤50 copies/ml (%)	86.59	85.42	98.84	79.60	<0.001
HIV RNA viral load ≤1000 copies/ml (%)	91.21	90.69	100.00	84.86	<0.001
HBsAg positive (%)	13.33	8.57	15.89	13.21	0.001
HBV DNA viral load (×107 copies/ml)	2.47	3.93	2.27	–	<0.001
Anti-HCV positive (%)	6.96	11.42	5.22	2.33	0.531
HCV RNA viral load (×106 copies/ml)	1.11	1.48	1.06	–	0.583
BMI (kg/m^2)	22.18	22.30	22.09	21.88	0.009
Hypertension (%)	16.63	14.94	17.20	22.90	<0.001
Diabetes mellitus (%)	3.96	4.55	3.05	3.00	0.021
Fasting plasma glucose (mg/dl)	98.36	100.58	94.49	95.16	<0.001
Hypercholesterolemia (%)	35.16	33.90	37.04	37.30	0.051
Total cholesterol (mg/dl)	203.89	202.25	212.32	198.31	<0.001
LDL-cholesterol (mg/dl)	130.83	132.91	117.76	128.15	<0.001
HDL-cholesterol (mg/dl)	53.37	55.11	50.78	49.42	<0.001
Triglyceride (mg/dl)	192.87	192.49	181.68	208.93	0.009

BIDI, Bamrasnaradura Infectious Diseases Institute; eGFR, estimated glomerular filtration rate; HBsAg, hepatitis B surface antigen; HBV, hepatitis B virus; HCV, hepatitis C virus; HIV-NAT, HIV Netherlands Australia Thailand Research Collaboration.

Table 3. Univariate and multivariate analysis.

		Univariate			Multivariate		
		IRR	95% CI	*P*	RH	95% CI	*P*
Age	Per 1 year older	1.088	1.075–1.101	<0.001	1.086	1.072–1.100	<0.001
BMI	Per 1 kg/m^2	1.036	1.008–1.066	0.012	1.001	0.965–1.038	0.962
Sex	Male vs. female	1.078	0.828–1.403	0.576	0.873	0.663–1.150	0.334
Hypertension	Yes vs. no	1.983	1.486–2.647	<0.001	1.190	0.867–1.633	0.283
Diabetes mellitus	Yes vs. no	5.215	3.694–7.361	<0.001	3.372	2.338–4.864	<0.001
Hypercholesterolemia	≥200 vs. <200 mg/dl	1.499	1.156–1.944	0.002	1.405	1.072–1.840	0.014
$CD4^+$ cell count	≤200 vs. >200 cells/μl	0.932	0.672–1.291	0.671	0.816	0.567–1.172	0.271
HIV viral load	Per log_{10} copies/ml higher	1.036	0.986–1.087	0.159	1.103	1.043–1.166	0.001

CI, confidence interval; IRR, incidence rate ratio; RH, relative hazard.

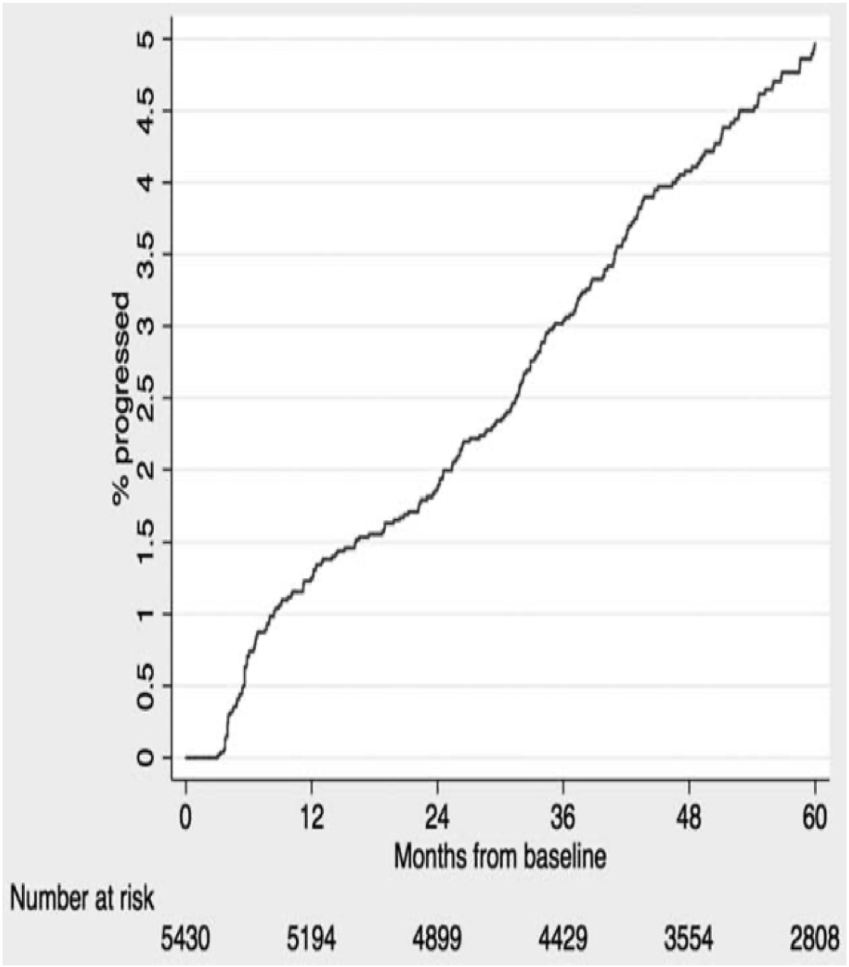


Fig. 1. Progression to chronic kidney disease, defined by estimated glomerular filtration rate and urine protein.

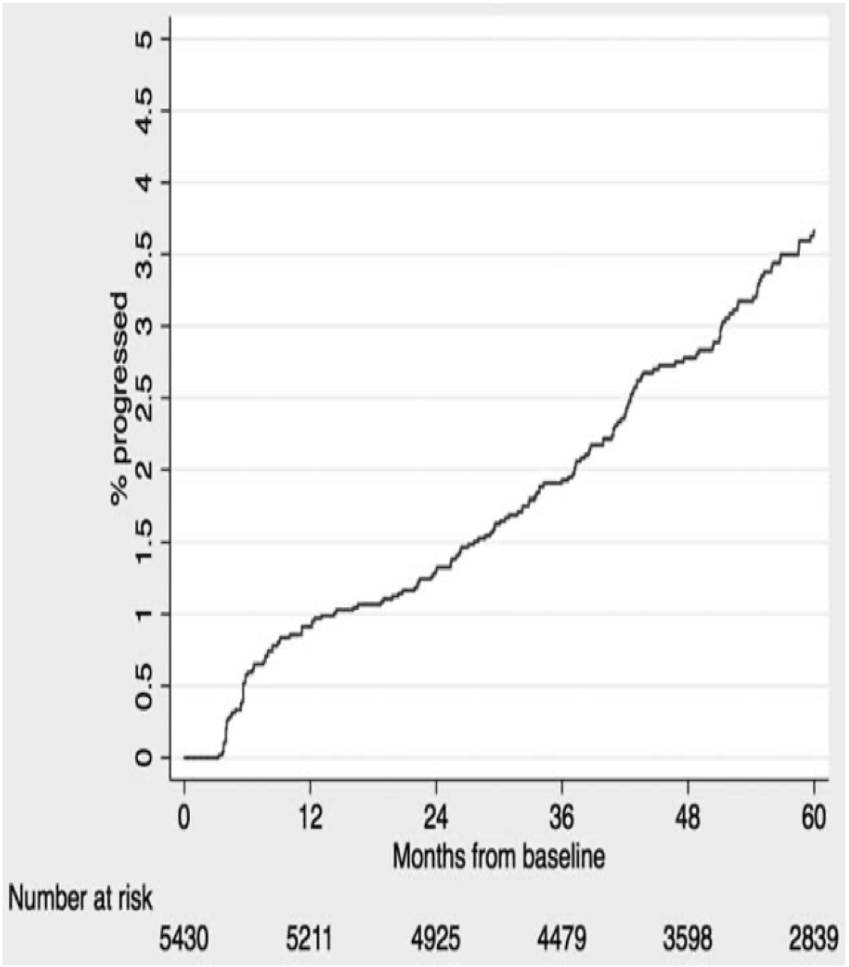


Fig. 2. Progression to chronic kidney disease, defined by estimated glomerular filtration rate.

CKD in Thai PLH :summary

- CKD incidence rate 10.39 per 1000 person-years at risk
- Average time to CKD was 26.4 months
- The adjusted RH significantly increased by 8.6% and 10.3% for each additional year of pt age and each additional log10 copies/ml of VL
- DM and dyslipidemia had significantly increased higher adjusted RH 3.37 and 1.41 respectively

AIDS 2018,32:393-398

คนไทยต้องล้างไตจากโรคอะไร

Etiology of dialysis prevalence patients in 2015

	Cases (%)
Diabetic nephropathy	2,4514 (38.57%)
Hypertensive nephropathy	19,515 (30.71%)
Obstructive nephropathy	2,379 (3.74%)
Presumed glomerulonephritis (No biopsy)	1,044 (1.64%)
Chronic urate nephropathy	873 (1.37%)
Lupus nephritis	783 (1.23%)
Polycystic kidney disease	558 (0.88%)
Glomerulonephritis: Biopsy-proven	447 (0.70%)
Chronic tubulointerstitial nephritis	125 (0.20%)
Analgesic nephropathy	146 (0.23%)
Allograft failure	201 (0.32%)
Chronic pyelonephritis	101 (0.16%)
Aplastic/dysplastic kidney disease	127 (0.20%)
Traumatic nephrectomy	97 (0.15%)
Renal cell carcinoma	64 (0.10%)
Multiple Myeloma	41 (0.06%)
Preeclampsia	33 (0.5%)
Alport's syndrome	30 (0.05%)
TB of KUB system	19 (0.03%)

Missing data 2015 = 14,796 cases

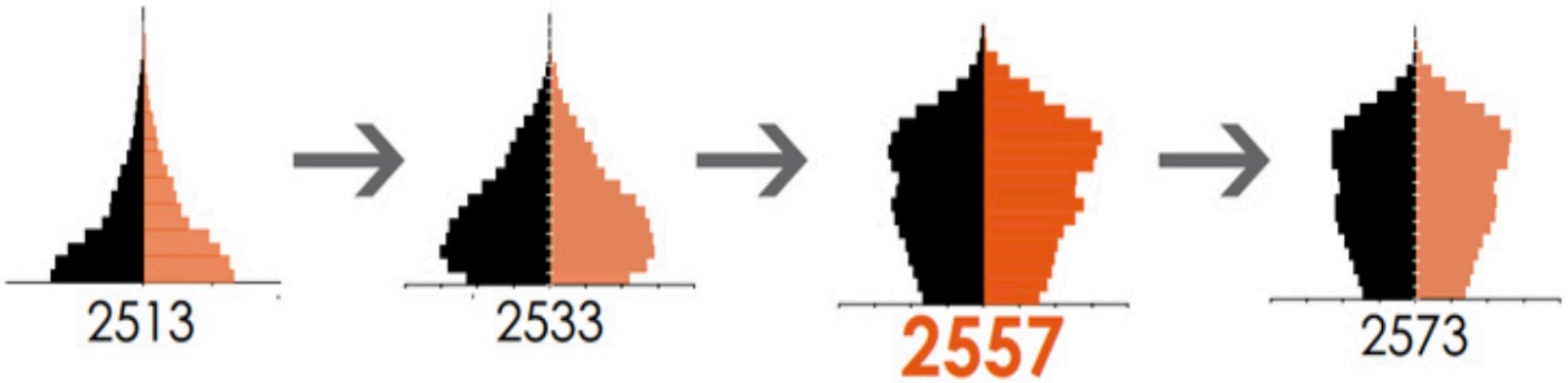
	Cases (%)
Ischemic nephropathy	16 (0.03%)
Scleroderma	14 (0.02%)
Herbal nephropathy	9 (0.01%)
Microscopic polyangitis	9 (0.01%)
Cryoglobulinemic glomerulonephritis	5 (0.01%)
Unknown	12,402 (19.51%)
Total	63,552(100%)

glomerulonephritis : Biosy-proren	Cases (%)
IgA Nephropathy	234 (52.35%)
Focal segmental glomerulosclerosis	95 (21.25%)
Crescentic glomerulonephritis	42 (9.40%)
Membranoproliferative GN	41 (9.17%)
Membranous nephropathy	19 (4.25%)
Mesangial proliferative IgM nephropathy	16 (3.58%)
Total	447 (100%)

เบาหวานบวกความดัน**70**%

พีระมิดประชากร ณ เวลาต่างๆ แสดงให้เห็นการสูงวัยของประชากรไทยได้อย่างชัดเจน

พีระมิดประชากรไทย ปี 2513, 2533, 2557 และ 2573



แหล่งข้อมูล:

สำมะโนประชากรและเคหะ ปี 2513 และ 2533, สำนักงานสถิติแห่งชาติ

การคาดประมาณประชากรของประเทศไทย ปี 2553-2583, สำนักงานคณะกรรมการพัฒนาการเศรษฐกิจและสังคมแห่งชาติ

THAILAND RENAL REPLACEMENT THERAPY: YEAR 2016-2019

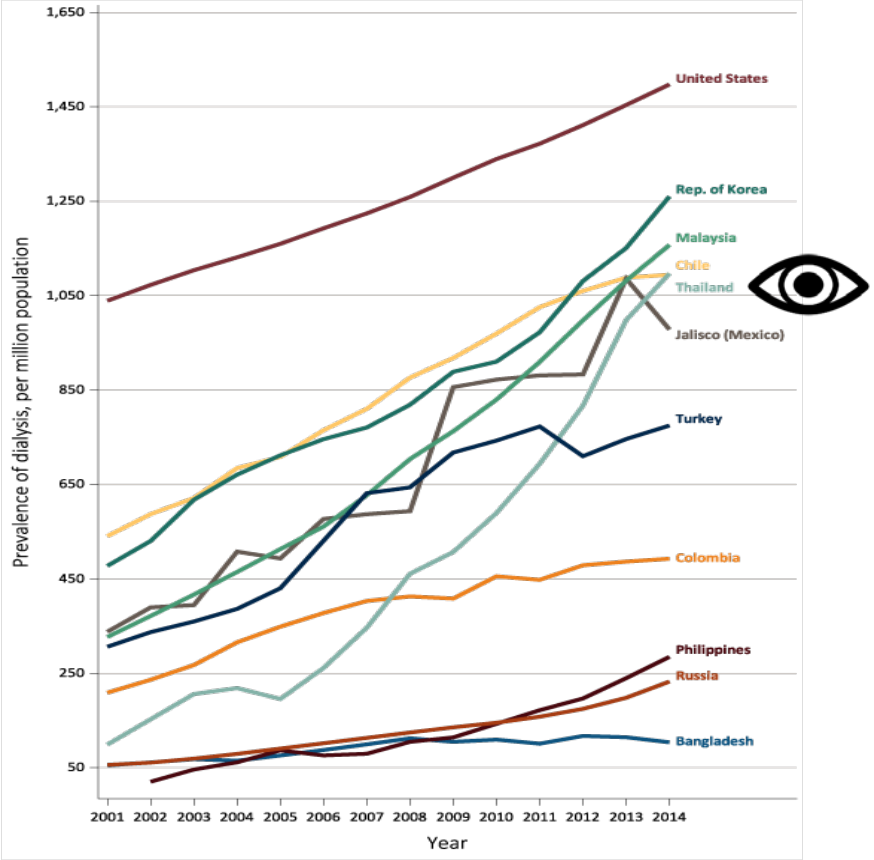
prevalence

ปี พ.ศ.	วิธีการรักษา			รวม (คน)	จำนวนประชากร**	ความชุก (คน)ต่อ 1 ล้านประชากร
	Hemodialysis	Peritoneal dialysis	Kidney Transplantation*			
2560	84,910	24,001	5,360	114,271	66,188,503	1,726
2561	97,265	26,070	5,652	128,987	66,413,979	1,942
2562	114,262	30,869	6,212	151,343	66,558,935	2,274

incidence

ปี พ.ศ.	วิธีการรักษา			รวม (คน)	จำนวนประชากร**	ผู้ป่วยรายใหม่ (คน)ต่อ1 ล้านประชากร
	Hemodialysis	Peritoneal dialysis	Kidney Transplantation*			
2560	12,288	3,785	709	16,782	66,188,503	253.5
2561	12,355	2,069	670	15,094	66,413,979	227.2
2562	16,997	4,799	729	22,525	66,558,935	338.4

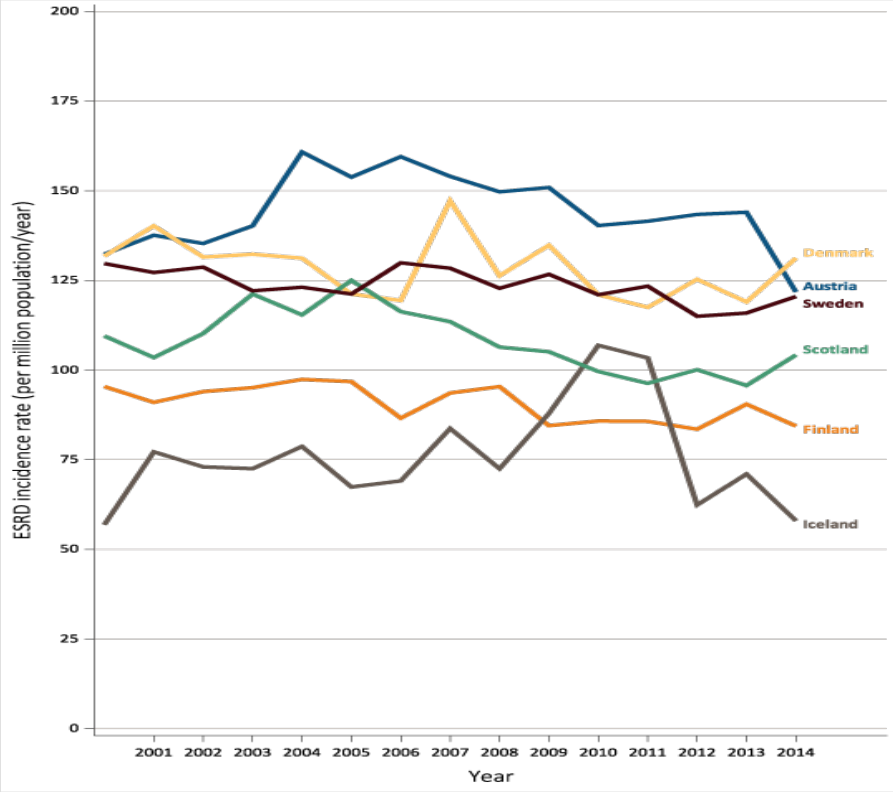
Trends in the prevalence of dialysis per million population, by country, 2001-2014



Data source: Special analyses, USRDS ESRD Database. Ten countries having the highest % rise in dialysis prevalence from 2001/02 versus that in 2013/14, plus the U.S. The prevalence is unadjusted and reflects prevalence of dialysis at the end of each year. Abbreviation: ESRD, end-stage renal disease.

Trends in the incidence rate of treated ESRD (per million population/year), by country, 2001-2014 *(continued)*

(b) Six countries having the largest % decline in ESRD incidence rate: 2013/14 versus that in 2001/02



100PPM vs Thai300PPM

Data source: Special analyses, USRDS ESRD Database. All rates are unadjusted. Only six countries had a decrease in incidence from 2001/02-2013/14.
Abbreviation: ESRD, end-stage renal disease.

Trend in number of prevalent cases of ESRD / HIV by RRT modalities year 2008-2013

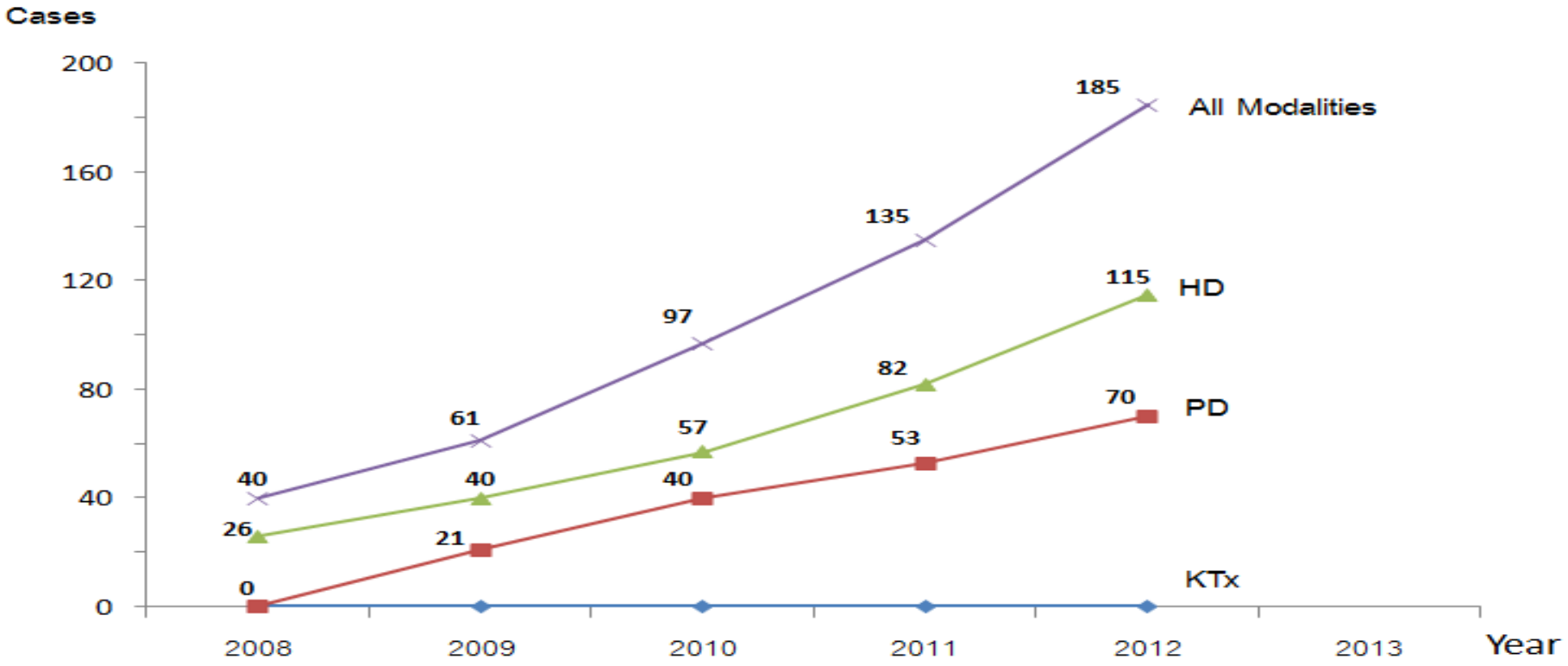


Table 1 | Prevalence of HIV infection in dialysis centers in the United States, Europe, and other regions

Country (reference)	Year	Total number of patients on dialysis	Prevalence of HIV infection (%)
United States[10]	1985	ND	0.3
	2002	263,820	1.5
Europe[11,12]	1984–1986	>4000	0–5
	1990	152,658	0.12
Italy[13]	1990	21,500	0.11
	1995	27,000	0.13
France[14,15]	1997	22,707	0.36
	2002	27,577	0.67
Spain[16,17]	2004	4962	1.15
	2006	14,876	0.54
Egypt[18]	1991	5000	1.64
Japan[19]	1986	1314	0
Brazil[20]	1986	132	14

Abbreviations: HIV, human immunodeficiency virus; ND, no data available.

ร้อยละของผู้ป่วยที่ตรวจพบ HBsAg, HBsAb, AntiHCV และ HIV ในปี พ.ศ. 2559-2562 ได้แสดงในภาพที่ 17

Serology tests	ร้อยละของที่ได้รับการตรวจเป็นบวก (Positive,%)			
	2559	2560	2561	2562
HBsAg	4.2	1.4	4.4	4.2
HBsAb	17.2	17.1	58.4	58.5
AntiHCV	1.5	1.1	2.7	2.6
HIV	0.1	0.2	0.8	0.7

บอร์ด สปสช.เคาะค่าฟอกไตผู้ป่วยไตติดเชื้อเอชไอวี หนุน รพ.จัดบริการ

21 ธันวาคม 2563 | 143 | 30

สปสช.
สำนักงานหลักประกันสุขภาพแห่งชาติ

การจ่ายชดเชยค่าบริการฟอกเลือดด้วยเครื่องไตเทียม (HD) สำหรับผู้ป่วยไตวายเรื้อรังที่เป็นผู้ติดเชื้อเอชไอวี ในระบบหลักประกันสุขภาพแห่ชาติ

สำนักสนับสนุนระบบบริการทุติยภูมิและตติยภูมิ
วันที่ 16 มีนาคม 2564

แนวทางปฏิบัติในการขอรับค่าใช้จ่ายเพื่อบริการสาธารณสุข
กรณีบริการฟอกเลือดด้วยเครื่องไตเทียม สำหรับผู้ป่วยไตวายเรื้อรัง ที่เป็นผู้ติดเชื้อเอชไอวี
ในระบบหลักประกันสุขภาพแห่งชาติ ปีงบประมาณ 2564

.....

วัตถุประสงค์

เพื่อส่งเสริมการจัดบริการฟอกเลือดด้วยเครื่องไตเทียม สำหรับผู้ป่วยไตวายเรื้อรังที่เป็นผู้ติดเชื้อเอชไอวี ให้ได้มาตรฐาน ปลอดภัยทั้งผู้ให้บริการและผู้รับบริการ

กลุ่มเป้าหมาย

ผู้ป่วยที่มีสิทธิหลักประกันสุขภาพแห่งชาติ และสิทธิว่าง เป็นผู้ป่วยโรคไตวายเรื้อรัง ที่เป็นผู้ติดเชื้อเอชไอวี ที่ต้องรับบริการฟอกเลือดด้วยเครื่องไตเทียม (HD)

คุณสมบัติของหน่วยบริการ

หน่วยบริการในระบบหลักประกันสุขภาพแห่งชาติ ที่ขึ้นทะเบียนเป็นหน่วยบริการ รับการส่งต่อเฉพาะด้านฟอกไต (HD)

ขอบเขตการให้บริการ

เป็นการให้บริการฟอกเลือดด้วยเครื่องไตเทียม สำหรับผู้ป่วยไตวายเรื้อรัง ที่เป็นผู้ติดเชื้อเอชไอวี

1) ผู้ป่วยเก่า ที่ผ่านการลงทะเบียนผู้ป่วยบริการฟอกเลือดด้วยเครื่องไตเทียม (HD)

2) ผู้ป่วยใหม่ ผ่านการพิจารณาจากคณะกรรมการเพื่อสนับสนุนผู้ป่วยไตวายเรื้อรังระยะสุดท้ายในระบบหลักประกันสุขภาพแห่งชาติให้เข้าถึงบริการทดแทนไตระดับเขต และให้กำหนดเงื่อนไขการรับบริการในกลุ่มเป้าหมายนี้ให้ได้รับบริการ automated peritoneal dialysis

อัตราการจ่ายเงินชดเชย

ค่าบริการฟอกเลือดด้วยเครื่องไตเทียม (Hemodialysis : HD) อัตราจ่ายครั้งละไม่เกิน 4,000 บาท ไม่เกิน 3 ครั้ง/สัปดาห์

4000บาท

การส่งข้อมูลขอรับค่าใช้จ่าย

หน่วยบริการบันทึกข้อมูลผ่านโปรแกรม DMIS_HD ตามรูปแบบที่กำหนด

Policies and Practices

Infection Control Policies and Practices for Outpatient Hemodialysis Facilities

Transmission of HIV in dialysis centre*

Martha Velandia, Scott K Fridkin, Victor Cárdenas, Jorge Boshell, Gerardo Ramirez, Lee Bland, Antonio Iglesias, William Jarvis

Epidemic Transmission of Human Immunodeficiency Virus in Renal Dialysis Centers in Egypt

Nasr M. El Sayed,[1] Peter John Gomatos,[2,a] Consuelo M. Beck-Sagué,[4,a] Ursula Dietrich,[5] Hagen von Briesen,[5] Saladin Osmanov,[6] José Esparza,[6] Ray R. Arthur,[2,7] Mohammed H. Wahdan,[3] and William R. Jarvis[4]

[1]National AIDS Programme, Ministry of Health and Population, and [2]Naval Medical Research Unit No. 3, Cairo, and [3]World Health Organization, Eastern Mediterranean Regional Office, Alexandria, Egypt; [4]Hospital Infections Program, Centers for Disease Control and Prevention, Atlanta, Georgia; [5]Georg-Speyer Haus, Frankfurt, Germany; [6]Joint United Nations Programme on HIV/AIDS, Global Programme on AIDS, and [7]Communicable Disease Surveillance and Response, World Health Organization, Geneva, Switzerland

MMWR

Recommendations and Reports
April 27, 2001 / 50(RR05);1-43

Recommendations for Preventing Transmission of Infections Among Chronic Hemodialysis Patients

Clinical Practice Guideline for the Management of Chronic Kidney Disease in Patients Infected With HIV: 2014 Update by the HIV Medicine Association of the Infectious Diseases Society of America

GUIDELINES

GUIDELINES FOR RENAL REPLACEMENT THERAPY IN HIV-INFECTED INDIVIDUALS IN SOUTH AFRICA

Special article

Croatian Recommendations for Dialysis of HIV-Positive Patients

Marijana Gulin[1], Zvonimir Puretic[2], Josip Begovac[3], Rok Civljak[3], Nikola Jankovic[4], Nikolina Basic-Jukic[5] and Sanjin Racki[6]

STANDARD PRECAUTIONS

A simple, consistent and effective approach to infection control


Handwashing


Use of gloves


Personal protective equipment


Use of fluid resistant gown or apron

Safe handling of sharps


Safe handling of waste


Safe handling of soiled linen


Environmental cleaning

Minimise contact with blood and body substances by utilising safe work practices and protective barriers.

STANDARD PRECAUTIONS APPLY TO ALL PATIENTS

NSW Infection Control Resource Centre
NSW HEALTH
Working as a Team

Your Role in Contact Transmission

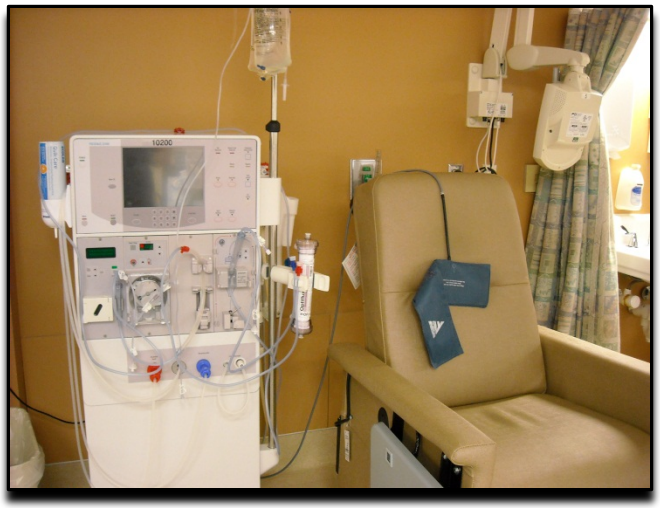
- During dialysis, infections can be spread by Contact Transmission
- Most commonly by **healthcare worker hands!**

Cleaning and Disinfecting the Dialysis Station

- **Cleaning** and **disinfection** reduce the risk of spreading an infection
- ***Cleaning*** is done using cleaning detergent, water and friction, and is intended to remove blood, body fluids, and other contaminants from objects and surfaces
- ***Disinfection*** is a process that kills many or all remaining infection-causing germs on clean objects and surfaces
  - Use an EPA-registered hospital disinfectant
  - Follow label instructions for proper dilution
- <u>Wear gloves</u> during the cleaning/disinfection process

Disinfecting the Dialysis Station

- All equipment and surfaces are considered to be contaminated after a dialysis session and therefore must be disinfected
- After the patient leaves the station, **disinfect** the dialysis station (including chairs, trays, countertops, and machines) after each patient treatment
  - Wipe all surfaces
  - Surfaces should be wet with disinfectant and allowed to air dry
  - Give special attention to cleaning control panels on the dialysis machines and other commonly touched surfaces
  - Empty and disinfect all surfaces of prime waste containers



Safe Handling of Dialyzers and Blood Tubing

- Before removing or transporting used dialyzers and blood tubing, cap dialyzer ports and clamp tubing
- Place all used dialyzers and tubing in leak-proof containers for transport from station to reprocessing or disposal area
- If dialyzers are reused, follow published methods (e.g., AAMI standards) for reprocessing

AAMI is the Association for the Advancement of Medical Instrumentation

Specific Infection Control Precautions for Hemodialysis Healthcare Workers

- HIV treatment-ART for any CD4 level
- PEP program for HCW
- Wear gloves and other personal protective equipment (PPE) for all patient care
- Promote vascular access safety
- Separate clean areas from contaminated areas
- Use medication vials safely
- Clean and disinfect the dialysis station between patients
- Perform safe handling of dialyzers

Hemodialysis in HIV :CDC recommendation

- Routine surveillance not required
- Isolation not required
- May re-use dialyzers

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

April 27, 2001 / Vol. 50 / No. RR-5

Yoshifuji *et al. Renal Replacement Therapy* (2018) 4:41
https://doi.org/10.1186/s41100-018-0178-3

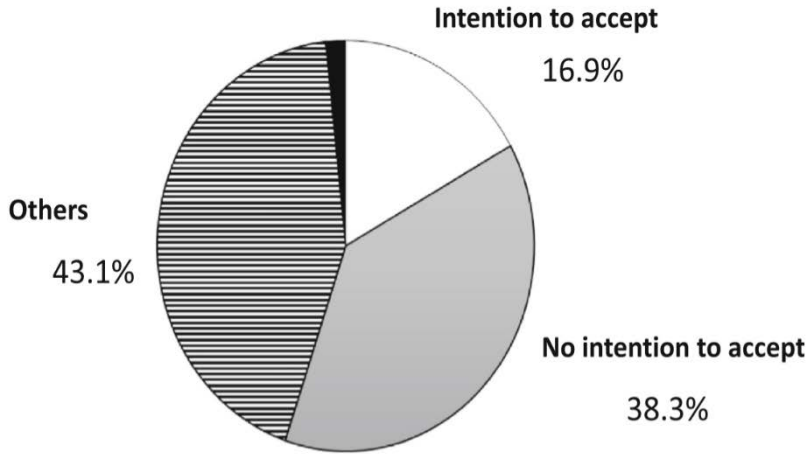
Renal Replacement Therapy

POSITION STATEMENT Open Access

Acceptance situation of HIV patients in Japanese dialysis facilities—questionnaire survey by the Infection Survey Subcommittee

Ayumi Yoshifuji[1], Munekazu Ryuzaki[1,2*], Yasuhiko Ito[1], Norio Ohmagari[1], Yoshihiko Kanno[1], Toshio Shinoda[1], Yaoko Takano[1], Isao Tsukamoto[1], Kazuhiko Hora[1], Yasushi Nakazawa[1], Naoki Hasegawa[1], Tadashi Yoshida[1], Shu Wakino[1], Yoshiaki Takemoto[1] and Hidetomo Nakamoto[1]

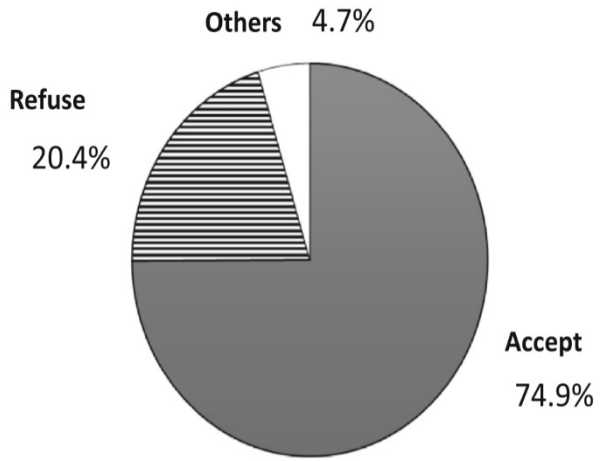
The intention to accept HIV positive patients in the future



The number of valid responses
2,538

The opinions of facilities on informing the results of this questionnaire survey to HIV core hospitals

facilities that intended to accept



Number of valid responses 426

Table 8 Knowledge of HIV related guidelines

'The Guidelines for Dialysis of HIV Positive Patients' published by Japanese Association of Dialysis Physicians and Japanese Society for Dialysis Therapy in 2010

Very familiar	Aware without practice	Vaguely familiar	Unknown
11.3%	43.2%	38.6%	7.4%

Number of valid responses 2552

(some facilities selected several answers at the same time)

'The Guidelines on Fundamental Handling and Infection Control in Dialysis Facilities in the fourth revised edition' published in 2015

Very familiar	Aware without practice	Vaguely familiar	Unknown
20.2%	46.7%	26.7%	6.7%

Number of valid responses 2553

(some facilities selected several answers at the same time)

'Treatment Guidelines for HIV' published by research division of Ministry of Health, Labour and Welfare in 2016

Very familiar	Aware without practice	Vaguely familiar	Unknown
6.1%	27.7%	42.8%	23.6%

Number of valid responses 2546

(some facilities selected several answers at the same time)

Table 7 Cooperation with facilities that have experiences of accepting HIV positive patients, or with HIV core hospitals

	number of responses	%
Experience of cooperation	221	8.9%
No experience of cooperation	1612	65.2%
Intention of cooperation	443	17.9%
No intention of cooperation	651	26.3%
Others	140	5.7%
number of valid responses	2472	–

Table 1. Identified Themes and Codes Describing Barriers to Provide Medical Care for PLWHA.

Theme	Subtheme
Fear of getting infected with HIV	Lack of knowledge of infection control measures
	Lack of knowledge of HIV
Disbelief regarding effectiveness of infection control measures	Infection control measures not sufficient to protect against HIV
	Occupational exposures are unavoidable
Misconceptions regarding medical care for PLWHA	PLWHA require special care
	HIV has no cure—no need for medical services
	Medical care for PLWHA can lead to legal consequences
Fear of being stigmatized by others	Patients
	Family
Moral judgments and negative connotations	PLWHA do not deserve care
	HIV is dirty, serious, and dangerous
	HIV means death
	PLWHA want to infect others


STIGMA

สถานการณ์การปลูกถ่ายไตปัจจุบันของประเทศไทย

ล้างไตหลักแสนเปลี่ยนไตหลักพัน

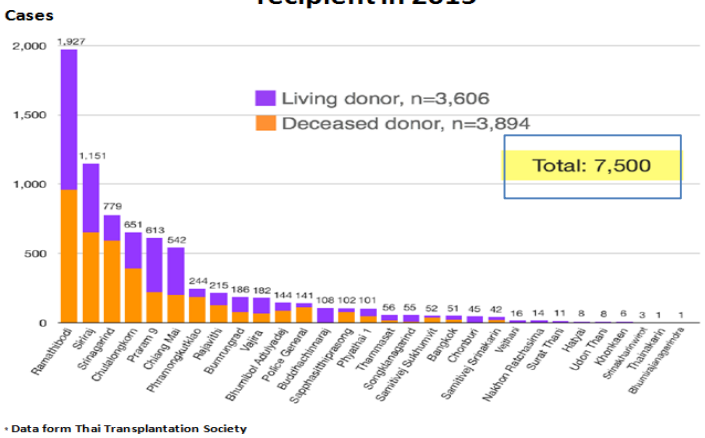
Yearly prevalence of Hemodialysis by region in 2015

	Population : millions	HD cases (%)	HD cases : pmp
Bangkok and vicinity	10.7	19,178 (35.4%)	1,792.3
Central part	9.5	5,670 (10.5%)	596.8
Western part	3.4	1,927 (3.6%)	566.8
Eastern Part	4.6	3,786 (7.0%)	823.0
Northeastern Part	21.9	12,456 (23.0%)	568.8
Southern Part	9.3	4,052 (7.5%)	435.7
Northern Part	6.3	7,035 (13.0%)	1,116.7
Total	65.7	54,104 (100%)	823.5

Yearly prevalence of Peritoneal dialysis by region in 2015

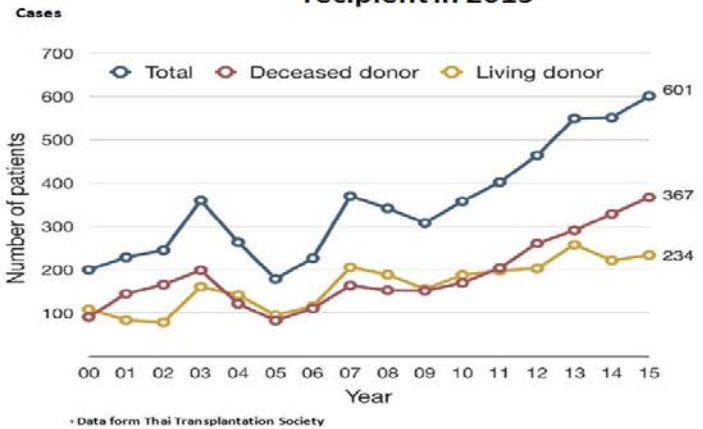
	Population : millions	PD cases (%)	PD cases :pmp
Bangkok and vicinity	10.7	3,540 (14.6%)	330.8
Central part	9.5	2,852 (11.8%)	300.2
Western part	3.4	1,139 (4.7%)	335.0
Eastern Part	4.6	2,247 (9.3%)	488.5
Northeastern Part	21.9	7,396 (30.5%)	337.7
Southern Part	9.3	3,225 (13.3%)	346.8
Northern Part	6.3	3,845 (15.9%)	610.3
Total	65.7	24,244 (100%)	369.0

Yearly prevalence of kidney transplantation recipient in 2015



Data form Thai Transplantation Society

Yearly incidence of kidney transplantation recipient in 2015



Data form Thai Transplantation Society

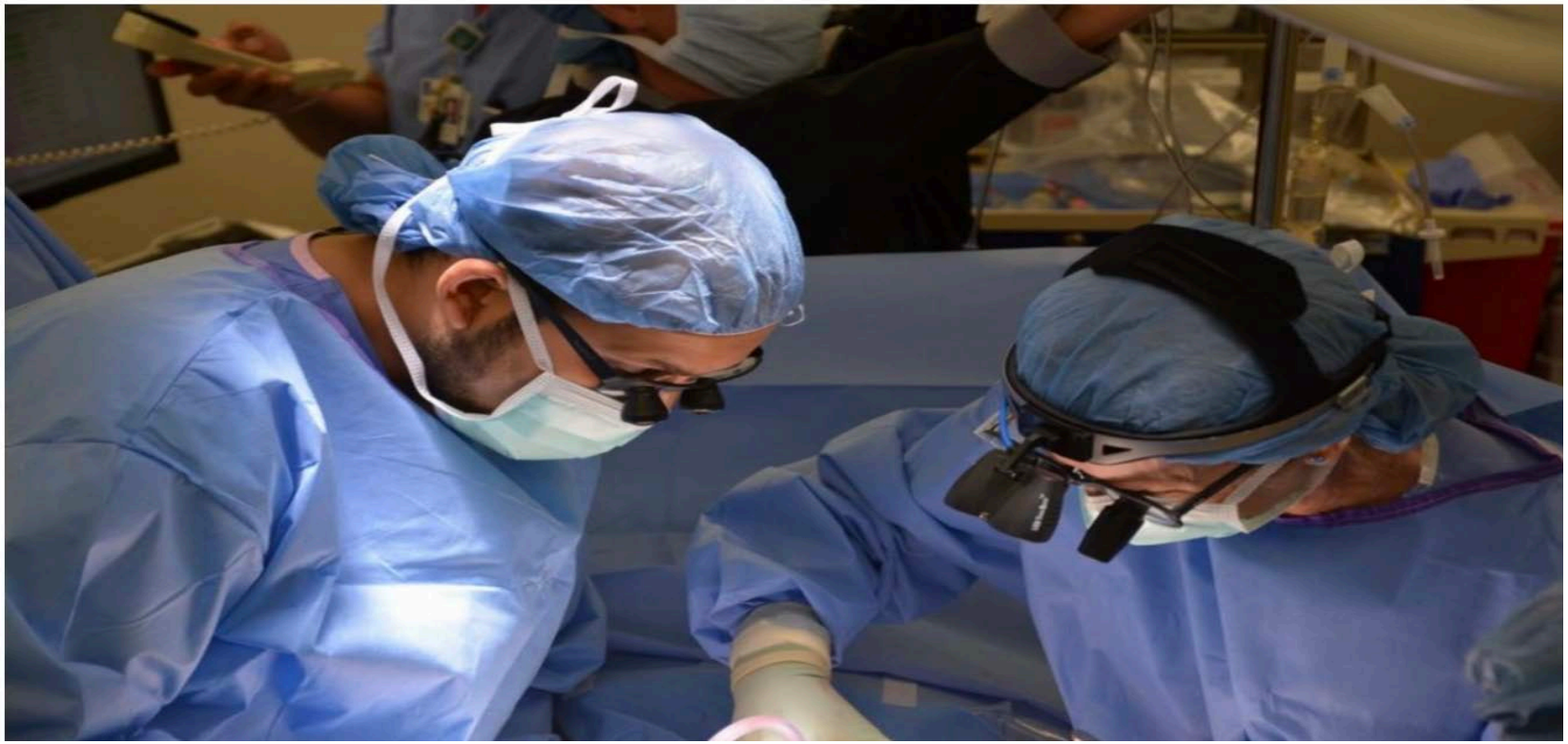
ความก้าวหน้าของการปลูกถ่ายไตในผู้ติดเชื้อHIV

Kidney International, Vol. 67 (2005), pp. 1622–1629

Safety and success of kidney transplantation and concomitant immunosuppression in HIV-positive patients

MYSORE S. ANIL KUMAR, DEBRA R. SIERKA, ANNA M. DAMASK, BILLIE FYFE, ROBERT F. MCALACK, MICHAEL HEIFETS, MICHAEL J. MORITZ, DANIEL ALVAREZ, and APARNA KUMAR

Departments of Surgery/Transplantation, Pharmacy, Pathology, Nephrology, and HIV Medicine, Drexel University College of Medicine and Hahnemann University Hospital, Philadelphia, Pennsylvania



Thai Transplantation Care ครั้งที่ 3

แนวทางการประเมินผู้รับบริจาคไต
(Kidney Transplant Candidate/Recipient)
เพื่อรอรับการปลูกถ่ายไต
ในผู้ป่วยไตวายเรื้อรังระยะสุดท้าย

สมาคมปลูกถ่ายอวัยวะแห่งประเทศไทย
Thai Transplantation Society
กันยายน ๒๕๖๓
September 2020

การตรวจคัดกรองภาวะติดเชื้อ HIV

- ผู้ป่วยไตวายเรื้อรังที่จะได้รับการประเมินเพื่อปลูกถ่ายไตทุกคนควรได้รับการคัดกรองภาวะติดเชื้อ HIV ด้วยการตรวจทาง serology (anti-HIV)
- สำหรับผู้ป่วยไตวายเรื้องรังที่มีภาวะติดเชื้อ HIV สามารถรับการปลูกถ่ายไตได้หากได้รับการรักษาและควบคุมเชื้อ HIV ได้ ได้แก่ ผู้ป่วยที่ CD4 > 200 cells/μL อย่างน้อย 3 เดือน, ตรวจไม่พบไวรัส HIV ในเลือด, ไม่มีการติดเชื้อฉวยโอกาสในช่วง 6 เดือนที่ผ่านมาและมีการรับประทานยาต้าน HIV อย่างสม่ำเสมอ

Table 2 | HIV criteria for renal transplantation in Spain, Italy, the United Kingdom, and the United States

	Spain[29]	Italy[31]	United Kingdom[30]	United States[a] (ref. 28)
Opportunistic infections	Some[b]	None in the previous year	None after cART-induced immunological reconstitution	Some[c]
Neoplasm	No	No		No
CD4+ T-cell count (cells/mm^3)	>200	>200	>200	>200
Plasma HIV-1 RNA viral load BDL on cART	Yes	Yes	Yes	Yes

Abbreviations: BDL, below detection level; cART, combined antiretroviral treatment; HIV, human immunodeficiency virus.
[a]Cooperative Clinical Trials in Adult Transplantation criteria.
[b]Previous tuberculosis, *Pneumocystis jiroveci* pneumonia (PCP), or esophageal candidiasis are not exclusion criteria.
[c]PCP and esophageal candidiasis are not exclusion criteria.

Pre-cART era: KT in PLH D-R+

Table 3 | Renal transplantation in the pre-cART period (before 1996)[a]

Author (reference)	Year	Number	Donor	Follow-up[b]	Fatal outcome[c]
Feduska *et al.*[36]	1980	2	Cadaver	44.5	2 (100%)
Kumar *et al.*[37]	1982	1	LD	8	1 (100%)
Imbasciati *et al.*[38]	1982	1	Cadaver	50	1 (100%)
Milgrom *et al.*[39]	1982	1	Cadaver	19	1 (100%)
Lang *et al.*[40]	1983	1	Cadaver	17	0
Poli *et al.*[41]	1983–1985	8	Cadaver	51	3 (37.5%)
Erice *et al.*[42]	1983–1984	2	Cadaver	74.5	0
Prompt *et al.*[43]	1984	2	Cadaver	26.5	2 (100%)
L'age-Stehr *et al.*[44]	1984	1	Cadaver	74	1 (100%)
Schwartz *et al.*[45]	1983–1984	4	Cadaver	69.2	2 (50%)
Margreiter *et al.*[46]	1984	1	Cadaver	69	0
Briner *et al.*[47]	1984	1	Cadaver	48	1 (100%)
Ahuja *et al.*[48]	1984	1	Cadaver	109	1 (100%)
Simonds *et al.*[49]	1985	2	Cadaver	23	2 (100%)
Bowen *et al.*[50]	1986	1	Cadaver	31	0
Ward *et al.*[51]	1986	1	Cadaver	31	0
Kerman *et al.*[52]	1987	2	Cadaver	27.5	1 (50%)
Carbone *et al.*[53]	1988	2	1 Cadaver/1 LD	31.5	2 (100%)
Tzakis *et al.*[54]	1981–1990	5	Cadaver	33	1 (20%)
Global	1980–1990	39	37 Cadaver/2 LD	48 (8–109)	21 (53.8%)

Abbreviations: cART, combined antiretroviral treatment; LD, living donor.
[a]Adapted from Schwarz *et al.*[34] and Trullas *et al.*[35]
[b]Mean time in months.
[c]Number (percentage).

cART era: KT in PLH D-R+

Table 5 | Renal transplantation in the cART period (1997–2010)

Author (reference)	Year	*N*	Donor	Follow-up[a]	Acute rejection[b]	Graft survival	Patient survival
Abbott *et al.*[56]	1996–2001	47	Cadaver	31	ND	98%	96%
Qiu *et al.*[57]	1997–2004	38	ND	60	0	76%	91%
Kuo *et al.*[58]	1999–2000	2	ND	6	ND	ND	100%
Stock *et al.*[59]	2000	6	4 Cadaver/2 LD	10	4	100%	100%
Roland *et al.*[60]	2002	26	ND	10	10 (38)	88%	92%
Toso *et al.*[61]	2000	1[c]	Cadaver	84	0	100%	100%
Kumar *et al.*[62]	2002	12	ND	12	4 (33)	100%	100%
Stock *et al.*[63]	2003	10	6 Cadaver/4 LD	16	5 (50)	100%	100%
Mazuecos *et al.*[64]	2001–2005	10	Cadaver	16	4 (40)	90%	100%
Kumar *et al.*[65]	2001–2004	40	36 Cadaver/4 LD	24	9 (22)	71%	82%
Roland *et al.*[66]	2000–2003	18	10 Cadaver/8 LD	36	12 (70)	83%	94%
Gruber *et al.*[67]	2004–2007	8	7 Cadaver/1 LD	15	1	88%	100%
Muller *et al.*[68]	ND	2	Cadaver	13	1	100%	100%
Ballarin *et al.*[69]	2007	1[d]	1 Cadaver	12	0	100%	100%
Trullas *et al.*[70]	2005–2006	3	3 Cadaver	24	2	100%	100%
Mazuecos[71]	2001–2009	20	ND	38	8 (40)	74%	95%
Trullas *et al.*[9]	2000–2004	26[e]	21 Cadaver/1 LD	ND	8 (30)	77%	100%
Billault *et al.*[72]	ND	7	Cadaver	12	0	100%	100%
Touzot *et al.*[73]	2005–2009	27	25 Cadaver/2 LD	29	4 (15%)	96%	98%
Stock *et al.*[74]	2003–2009	150	102 Cadaver/48 LD	20.4	41%[f]	73.7%[g]	88.2%[g]

Abbreviations: cART, combined antiretroviral treatment; LD, living donor; ND, no data available.
[a]Mean time in months.
[b]Number (percentage when $N \geqslant 4$).
[c]Pancreas–kidney transplant.
[d]Kidney–liver transplant.
[e]Data available for 22 patients.
[f]Cumulative incidence of rejection at 3 years (49 (33%) patients had 67 acute rejection episodes).
[g]Three-year survival rates.

cART era pt and graft survival of D-R+ equal to D-R-

Table 4 | Patient and graft survival rates in HIV-positive renal transplant recipients. Differences between pre-cART and cART era

	Pre-cART era, 1987–1997[a]			cART era, 2003–2009[b]			
	5-year survival rates			1/3-year survival rates			
	USRDS (n=63,210)	HIV+ (n=32)	P-value	SRTR (age ⩾65)[c]	SRTR (overall)[c]	HIV+ (n=150)	P-value
Patient survival	78%	71%	<0.05	91.8/79.5%	96.2/90.6%	94.6/88.2%	NS
Graft survival	61%	44%	<0.05	88.3/74.4%	92.5/82.8%	90.4/73.7%	NS
Acute rejection	48.4%	50%	—	12.3%[d]	31/41%	—	—

Abbreviations: cART, combined antiretroviral treatment; HIV, human immunodeficiency virus; NS, non significant; SRTR, US Scientific Registry of Transplant Recipients; USRDS, United States Renal Data System.

[a]Swanson *et al.*[55]

[b]Stock *et al.*[74]

[c]SRTR survival estimates for older kidney transplant recipients (age ⩾65 years) and for all kidney transplant recipients.

[d]SRTR 1-year acute rejection rate (SRTR 3-year acute rejection rate not available).

Table 7 | Antiretroviral drug regimens recommended among HIV-infected renal transplant recipients

1. NRTIs
   - A combination of two NRTIs (for example tenofovir plus emtricitabine or abacavir plus lamivudine) can be used safely in renal transplant recipients with dose adjusted to renal function.
   - Tenofovir should be used with caution and close monitoring of renal function.
   - Abacavir should not be used in recipients receiving a kidney from an HLA-B57*01-positive donor to avoid the potential risk of hypersensitivity reaction to abacavir.

2. NNRTIs and protease inhibitors
   - Can be used safely in combination with two NRTIs
   - Important interactions with immunosuppressive drugs may appear, mainly with protease inhibitors.

3. Novel classes of antiretrovirals
   - Must be considered in combination with NRTIs
   - Integrase inhibitors (raltegravir): have no interactions with immunosuppressive agents at the CYP450 level.
   - Entry inhibitors (enfuvirtide (T20)): could be an alternative in combination with NRTIs, although subcutaneous administration is a limitation.
   - CCR5 co-receptor antagonists (maraviroc): a substrate of CYP450. Its levels can be modified by inducers or inhibitors. Experimental studies have suggested that maraviroc could have an important role as an antirejection drug.

Abbreviations: CCR5, CC chemokine receptor 5; HIV, human immunodeficiency virus; NNRTI, non-nucleoside reverse transcriptase inhibitor; NRTI, nucleoside/nucleotide reverse transcriptase inhibitor.

Table 8 | Immunosuppressive regimens in HIV-infected renal transplant recipients in the cART period

Author (reference)	*N*	CyA	FK	AZA	SRL	MMF	Corticosteroids	Basiliximab/ daclizumab	ATG/OKT3
Abbott *et al.*[56]	47	30 (68.2)	19 (43.2)	7 (15.9%)	—	38 (86.4)	—	—/22 (46.8%)	—
Qiu *et al.*[57]	38	20 (52%)	13 (34%)	—	14 (36.8%)	—	—	10 (26.3%)/6 (15%)	4 (10%)/3 (7.9%)
Kuo *et al.*[58]	2	Preferred[a]	Preferred[a]	—	—	—	—	—	—
Stock *et al.*[59]	6	Preferred[a]	—	—	—	Preferred[a]	Preferred[a]	—	—
Roland *et al.*[60]	26	Preferred[a]	—	—	—	Preferred[a]	—	—	—
Toso *et al.*[61]	1	—	1 (100%)	—	—	1 (100%)	1 (100%)	1 (100%)/—	—
Kumar *et al.*[62]	12	ND	ND	ND	ND	ND	ND	ND	ND
Stock *et al.*[63]	10	Preferred[a]	—	—	—	Preferred[a]	Preferred[a]	—	—
Mazuecos *et al.*[64]	10	—	10 (100%)	—	—	10 (100%)	10 (100%)	—	1 (10%)/—[b]
Kumar *et al.*[65]	40	40 (100%)	—	—	40 (100%)	—	40 (100%)	40 (100%)/—	—
Roland *et al.*[66]	18	12 (66%)	—	—	5 (28%)	16 (89%)	—	6 (34%)/1 (5.5%)	—
Gruber *et al.*[67]	8	8 (100%)	—	—	—	8 (100%)	8 (100%)	8 (100%)	—
Muller *et al.*[68]	2	1 (50%)	1 (50%)	—	—	2 (100%)	2 (100%)	ND	ND
Ballarin *et al.*[69]	1	1 (100%)	—	—	1 (100%)	—	1 (100%)	1 (100%)/—	—
Trullas *et al.*[70]	3	—	1 (33%)	—	2 (67%)	3 (100%)	3 (300%)	—	3 (100%)/—
Trullas *et al.*[9]	26[c]	7 (32%)	15 (68%)	1 (4.5%)	—	19 (86%)	19 (86%)	3 (14%)/5 (23%)	5 (23%)/—
Billault *et al.*[72]	7	—	7 (100%)	—	—	7 (100%)	7 (100%)	—/7 (100%)	—
Touzot *et al.*[73]	27	11 (41%)	16 (59%)	—	—	27 (100%)	27 (100%)	26 (97%)/—	1 (3%)/—
Stock *et al.*[74]	150	33 (22%)	99 (66%)	—	—[d]	131 (87%)	150 (100%)	76 (51%)	48 (32%)/—

Abbreviations: ATG, thymoglobulin; AZA, azathioprine; Corticosteroids, prednisone; cART, combined antiretroviral treatment; CyA, cyclosporine; FK, tacrolimus; HIV, human immunodeficiency virus; MMF, mycophenolate mofetil; *N*, number of transplants; ND, no data available; OKT3, muromonab-CD3; SRL, sirolimus.

[a]Immunosuppression regimens were based on these drugs, but the exact number of patients is not specified.

[b]Anti CD-25 was used in 3 patients.

[c]Data available for 22 patients.

[d]SRL was used in patients with calcineurin inhibitor-associated nephrotoxicity.

Drug-drug interaction

- MMF+ATV- level increased
- MMF+RTV- level decreased
- CSA/Tacrolimus+PIs-level increased :aware of acute rejection if stop Pis
- NNRTI as enz inducer :trigger rejection if not increase dose of CSA/Tacrolimus
- Prefered Integrase inhitor

2015

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

HIV-Positive–to–HIV-Positive Kidney Transplantation — Results at 3 to 5 Years

Elmi Muller, M.B., Ch.B., M.Med., Zunaid Barday, M.B., Ch.B.,
Marc Mendelson, M.D., Ph.D., and Delawir Kahn, M.B., Ch.B., Ch.M.

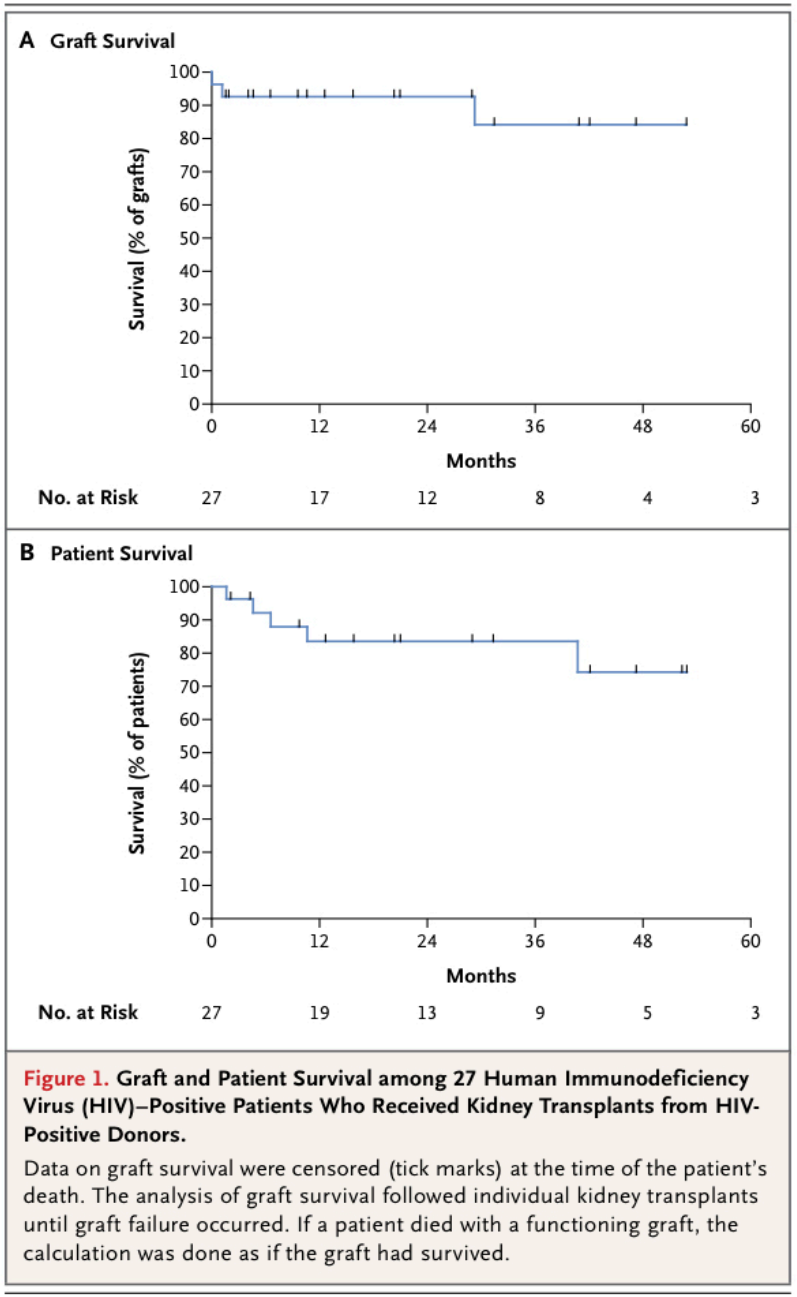


Figure 1. Graft and Patient Survival among 27 Human Immunodeficiency Virus (HIV)–Positive Patients Who Received Kidney Transplants from HIV-Positive Donors.

Data on graft survival were censored (tick marks) at the time of the patient's death. The analysis of graft survival followed individual kidney transplants until graft failure occurred. If a patient died with a functioning graft, the calculation was done as if the graft had survived.

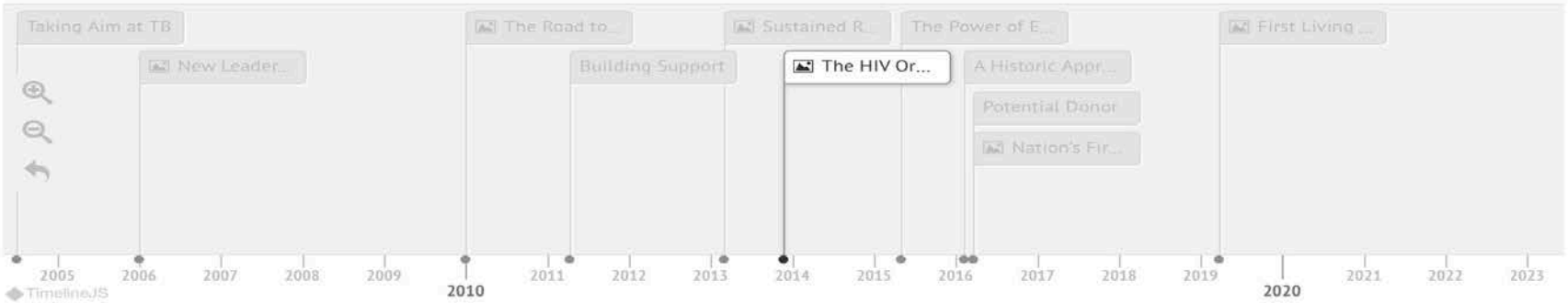
SUSTAINED REMISSION FOR HIV-INFECTED INFANTS

NOVEMBER 21, 2013

THE HIV ORGAN POLICY EQUITY ACT OF 2013

The HIV Organ Policy Equity Act of 2013 is approved by a Congress that passes just 57 laws that year. It allows transplant of HIV-positive organs in HIV-positive patients.

THE POWE
EARLY TREATI
MAY



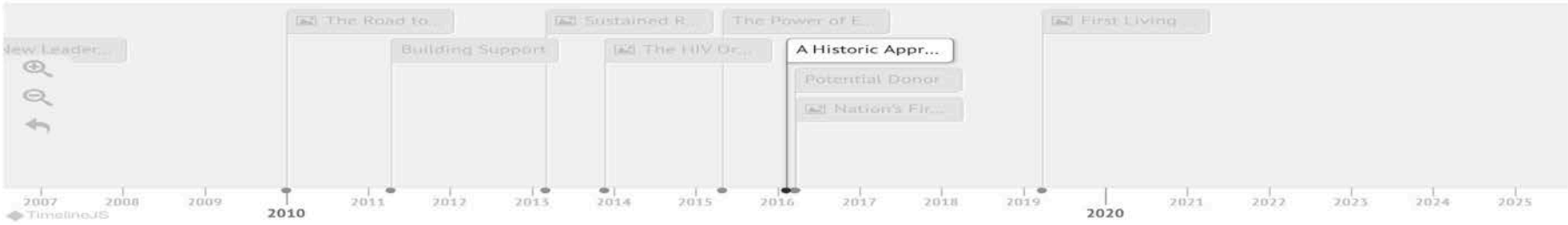
FEBRUARY 8, 2016

A HISTORIC APPROVAL

Johns Hopkins is the first hospital approved by the United Network for Organ Sharing for HIV-positive organ transplants to HIV-positive recipients.

THE POWER OF EARLY TREATMENT

POTENTIAL DO
MARCH 18,



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

HIV-Positive–to–HIV-Positive Kidney Transplantation — Results at 3 to 5 Years

2015-2019

Elmi Muller, M.B., Ch.B., M.Med., Zunaid Barday, M.B., Ch.B.,
Marc Mendelson, M.D., Ph.D., and Delawir Kahn, M.B., Ch.B., Ch.M.

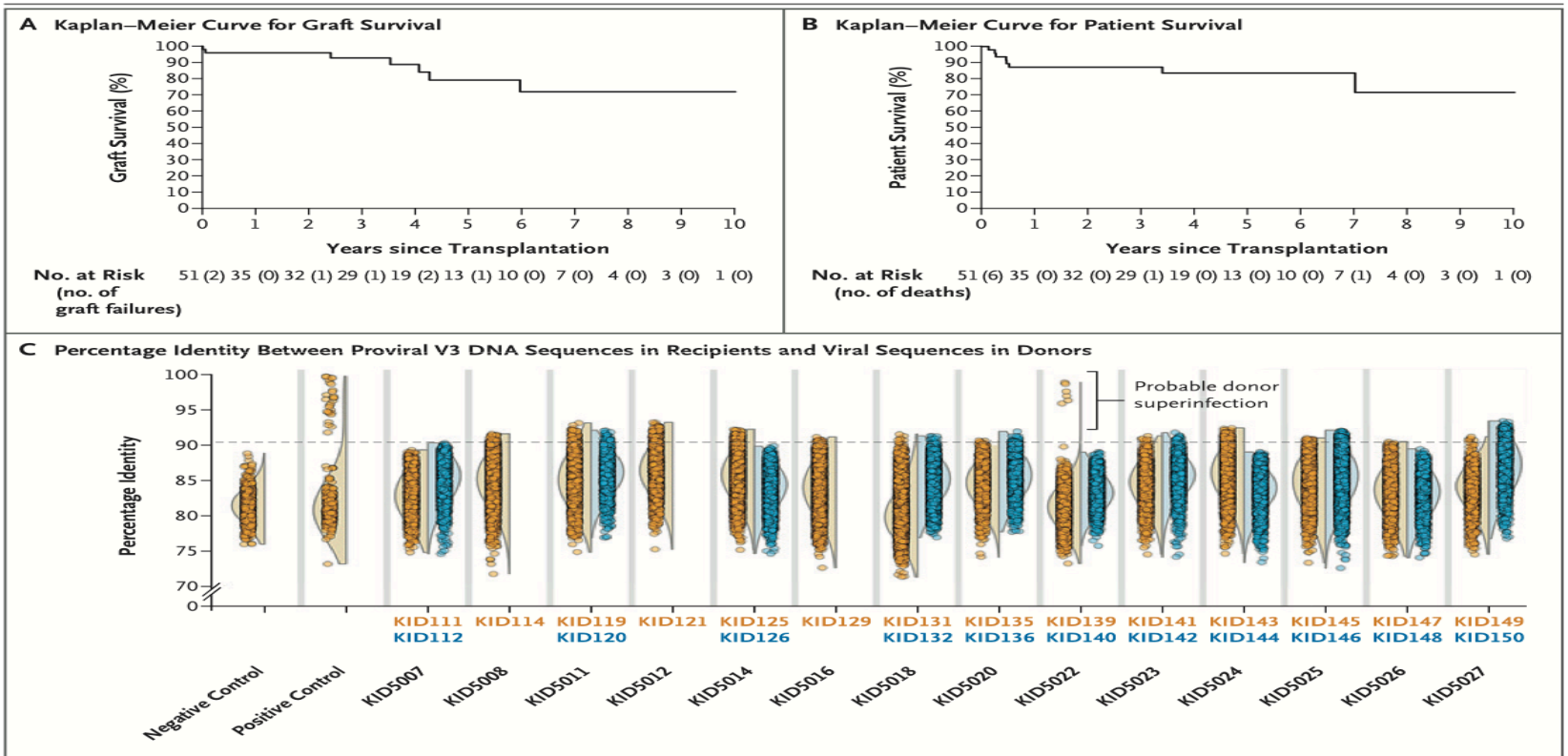


Figure 1. Clinical Outcomes and HIV Superinfection in HIV-Positive–to–HIV-Positive Renal Transplantation.

Panel A shows the Kaplan–Meier curve for graft survival (with data from patients who died with a functioning graft censored at the time of death), and Panel B, the Kaplan–Meier curve for patient survival after transplantation. Panel C shows the percentage identity between the proviral V3 DNA sequences (derived from the peripheral-blood mononuclear cell samples from 25 recipients) and their closest matching viral sequences in the respective donors. The dashed line indicates the level of percentage identity in the V3 region below which 99% of any two subtype C viruses from the Los Alamos National Laboratory 2017 reference panel would fall when compared (https://www.hiv.lanl.gov). Percentage identity above this level indicates a likely donor superinfection. Results in positive and negative controls are shown on the left. In most cases, there were two recipients (indicated by orange or blue dots and text) per donor (indicated in black text).

MARCH 20, 2016

NATION'S FIRST HIV-POSITIVE TRANSPLANTS

Liver transplant surgeon Andrew Cameron (left) performs the nation's first HIV-positive to HIV-positive liver transplant; kidney transplant surgeon Niraj Desai performs the nation's first HIV-positive to HIV-positive kidney transplant. Both patients respond well.

POTENTIAL DONOR

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MARCH 25,

FIRST LIVING DONOR HIV-TO-HIV KIDNEY TRANSPLANT IN THE U.S.

Nina Martinez becomes the first person in the U.S. living with HIV to donate a kidney. Dorry Segev and Niraj Desai at The Johns Hopkins Hospital performed successful surgeries to remove and transplant her kidney into a recipient with HIV. This

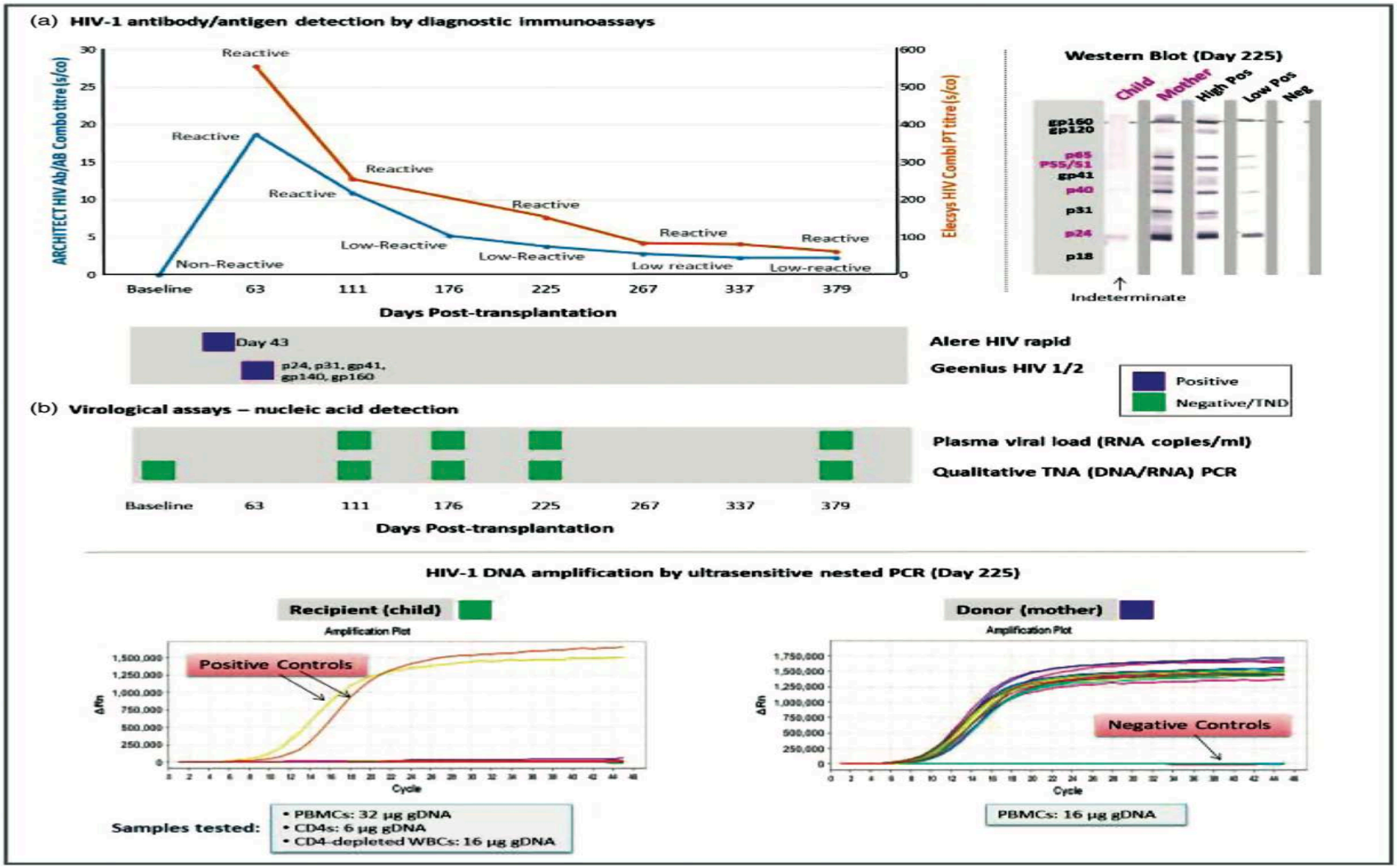
NATION'S FIRST HIV-POSITIVE TRANSPLANTS

Living donor liver transplant from an HIV-positive mother to her HIV-negative child: opening up new therapeutic options

D+R-

Jean Botha[a], Francesca Conradie[b,c], Harriet Etheredge[a,c], June Fabian[a,c], Mary Duncan[a], Ahmad Haeri Mazanderani[d,e], Maria Paximadis[d,f], Heather Maher[a], Russell Britz[a], Jerome Loveland[a,g], Bernd Ströbele[a], Sharan Rambarran[a], Adam Mahomed[a,c], Alta Terblanche[a], Marisa Beretta[a], Liam Brannigan[a], Michael Pienaar[a], Lindsay Archibald-Durham[a], Allison Lang[a] and Caroline T. Tiemessen[d,f]

AIDS2018,32:F13-F19



The next step

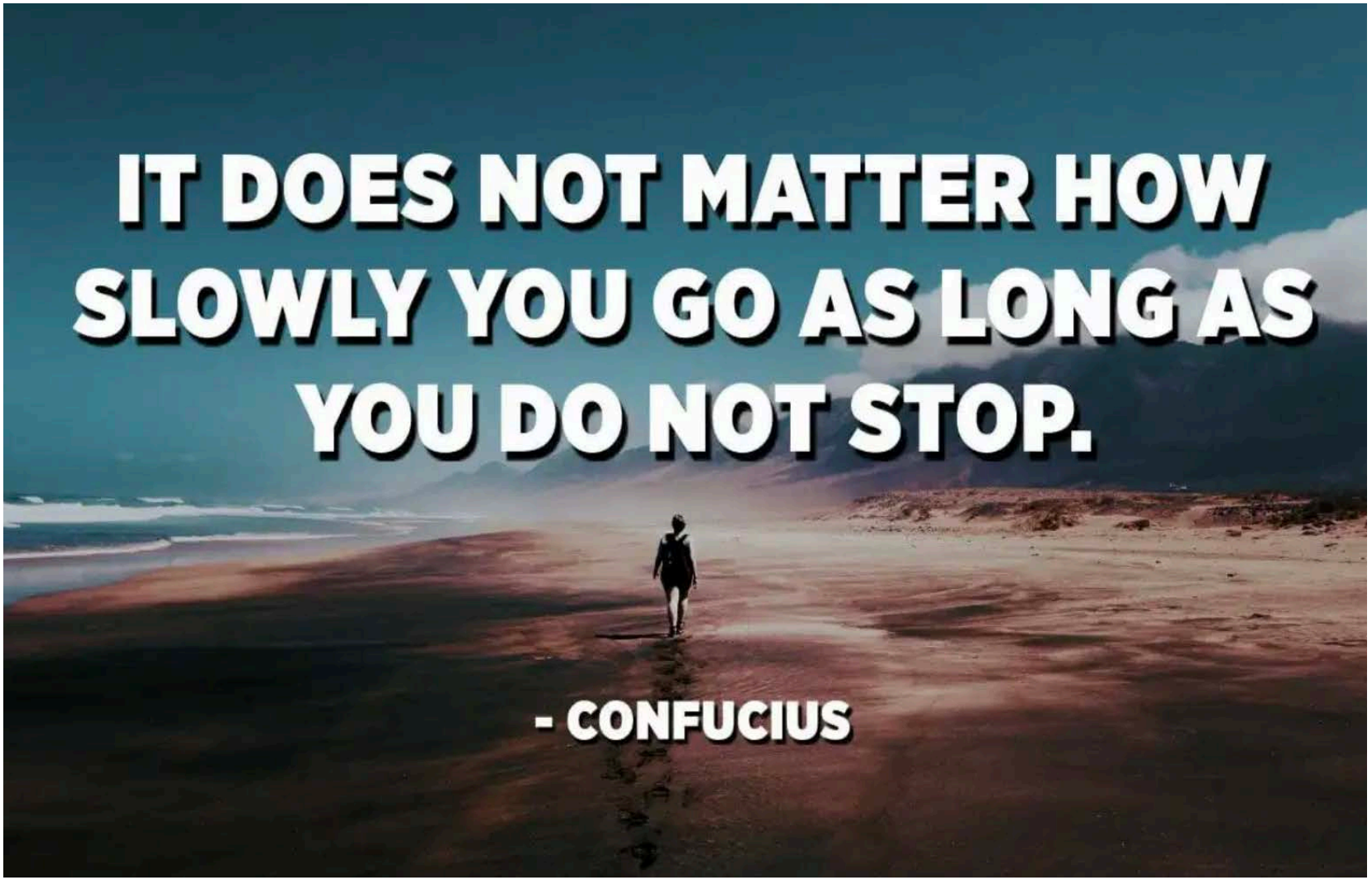
- The most appropriate combination of immunosuppressive and antiretroviral drugs must be established
- Knowledge of the pathogenesis of acute rejection should be expanded
- Clinical course of HIV infection in patients receiving longterm immunosuppression

HIV Donor-negative/Recipient-positive (D-/R+)

HIV Donor-positive/Recipient-positive (D+/R+)

HIV Donor-positive/Recipient-negative (D+/R-)

Bottom line: Propelled by rigorous science, strong advocacy, and landmark legislation, HIV D-/R+ and HIV D+/R+ kidney and liver transplants have demonstrated robust outcomes and are becoming more common worldwide. The recently successful HIV D+/R- liver transplant in South Africa further highlights the potential for HIV-infected and -uninfected donors and recipients to mutually benefit from solid-organ transplantation.


IT DOES NOT MATTER HOW SLOWLY YOU GO AS LONG AS YOU DO NOT STOP.
- CONFUCIUS