

# International Variation in Dialysis Discontinuation: Results from the Dialysis Outcomes and Practice Patterns Study (DOPPS)

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## Background / Goal

### Background

- Dialysis treatment is time consuming and burdensome for many patients.
- Discontinuation of dialysis therapy (DDT) is defined as the process of stopping dialysis in a deliberate and meaningful way, which was determined by dialysis staff
- Previous studies have demonstrated considerable regional variation in rates of DDT, even after adjustment for age, sex and dialysis vintage (Gessert). Variation may result from differences in cultural and economic factors, the availability of palliative care services, and the attitudes of the health care team (Gessert, Lambie, Thomas).

### Goal: Assess international variability in DDT across 12 countries and its association with clinical characteristics

## Methods

### Design: Prospective cohort study of DDT in 12 DOPPS countries, 1996-2015

**Sample:** Out of 241014 patients who received hemodialysis in participating DOPPS facilities during study phases 1-5 (1996 to 2015), 46370 died during study follow up, and 5412 patients left DOPPS facility due to discontinuation of dialysis therapy, where the reason for departure was identified by staff: DDT v. death, transfer, transplantation, or other.

- Limitations:** Phase 1 time on dialysis information only available for subset of patients randomly selected into full study; phase 4 and 5 US large dialysis organization facilities were excluded due to DDT information unavailability

### Analysis:

- Model:** Cox model to estimate hazard ratios (HRs), adjusting for covariates
- Outcome:** Dialysis discontinuation; non-DDT death events were censored
- Main Predictors:** Age, time on dialysis, country, diabetes status, DOPPS phase
- Adjustment covariates:** Country, phase, age, time on dialysis, sex, diabetes

## DOPPS The Dialysis Outcomes and Practice Patterns Study



Support for the DOPPS Program (including CKDopps, DOPPS, and PDOPPS) is provided by Amgen (founding sponsor, since 1996), Kyowa Haikko Kirin (since 1999, in Japan), and Baxter Healthcare (since 2011). Additional support is provided for specific projects and/or countries by Amgen, AstraZeneca, Hexal, Janssen, Kenexa, Proteon, Relypsa, Roche, Vifor Fresenius Renal Pharma, ERA-EDTA, Japanese Society for PD, Societies for Nephrology in Germany, Italy, and Spain. Public funding is provided by a number of institutions. The DOPPS.org website has full details.

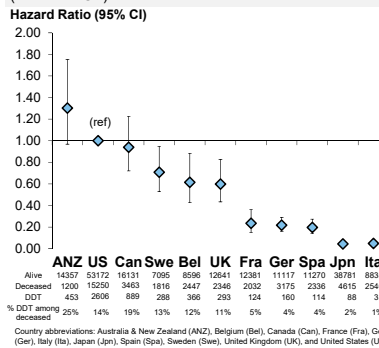
The DOPPS Program is coordinated by Arbor Research Collaborative for Health, Ann Arbor, MI, USA.

The DOPPS is an international prospective cohort study of hemodialysis treatment and patient outcomes:

- DOPPS 1 (1996-2001):** 308 dialysis facilities and 17,034 patients in 7 countries (France, Germany, Italy, Japan, Spain, UK, and US)
- DOPPS 2 (2002-2004), DOPPS 3 (2005-2008), DOPPS 4 (2009-2011):** ≥300 facilities and 11,000 - 13,000 patients per study phase in 12 countries (DOPPS 1 countries + Australia, Belgium, Canada, New Zealand, and Sweden)
- DOPPS 5 (2012-2015), DOPPS 6 (2015-2017):** ~500 facilities and 30,000 patients in nine new countries (Bahrain, China, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, Russia, and Turkey) in addition to the 12 countries represented in DOPPS 4

## Results

**Figure 1:** Adjusted HR (95% CI) of DDT for each country (relative to US)

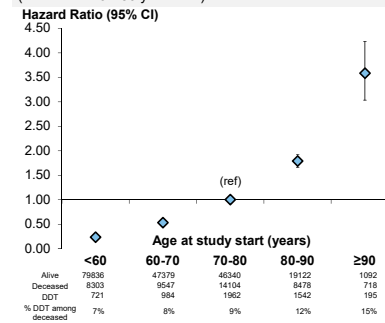


**Table 1:** Patient Characteristics

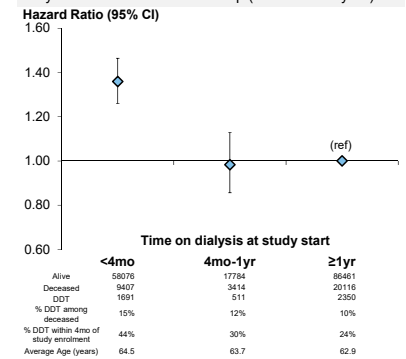
	DDT <sup>a</sup>	Non-DDT Deceased	Alive at end of follow up
N Patients	5412	41226	194376
Percent Patients	2%	17%	81%
Age (years)* <sup>1</sup>	75[66,81]	72[62,79]	63[51,73]
Time on dialysis (years)* <sup>1,2</sup>	1.1[0.0,3.6]	1.9[0.2,5.0]	1.3[0.1,4.6]
Sex: % Male	53%	59%	60%
Diabetic	42%	42%	35%
Study follow up time (years)	0.7[0.3,1.4]	0.8[0.3,1.5]	1.3[0.4,2.3]

Table shows median [interquartile range] or % exclusive column categories  
<sup>1</sup> Age and time on dialysis at time of study start or facility enrollment during phase  
<sup>2</sup> Phase 1 time on dialysis information only available for patients in full study;  
<sup>a</sup> DDT includes 268 patients without death date

**Figure 2:** Adjusted HR (95% CI) of DDT for each age group (relative to 70-80 year-olds)



**Figure 3:** Adjusted HR (95% CI) of DDT for time on dialysis since the start of follow up (relative to ≥1 year)



## Results

- Adjusted DDT HRs varied greatly, with
  - 30-fold variation across countries (figure 1) and
  - 15-fold variation across age groups (figure 2)
- DDT rates were highest
  - within 4 months of dialysis initiation (figure 3)
  - among those with diabetes: HR = 1.15 (95% CI = 1.08, 1.22)
- No consistent trend in DDT was observed across DOPPS phases (results not shown)
- Interaction was observed between age and country ( $p < 0.01$ ), age and time on dialysis ( $p < 0.01$ ), and time on dialysis and country ( $p < 0.01$ )

## Summary / Conclusions

- The wide variation of DDT amongst 12 countries suggests sociocultural determinants may be important contributors to DDT, and how DDT is designated and accepted.
- The strong association of DDT with age and time on dialysis may imply different considerations and practices with respect to DDT for different patient populations.
- Enhancing our understanding of DDT, particularly during the first few months of dialysis therapy, may help align practices when considering dialysis initiation and help us better understand the need for conservative management and palliative renal care services.

### References:

Gessert 2013 (PMID 23635315); Lambie 2006 (PMID 16820372); Thomas 2013 (PMID 23580783)



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