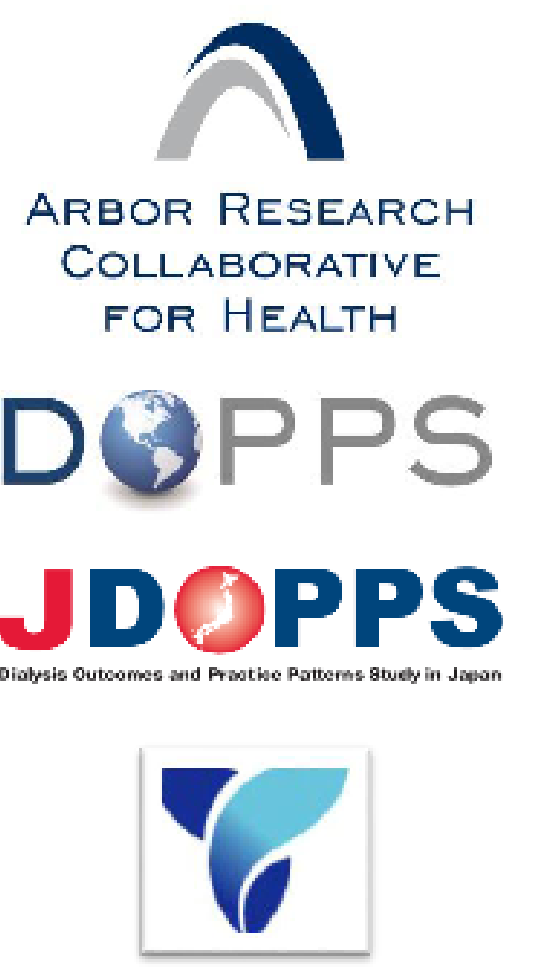


Unique Hemoglobin A1c Level Distribution and Its Association with Mortality among Diabetic Japanese Hemodialysis Patients: Results from The Japanese Dialysis Outcomes And Practice Patterns Study



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Background / Objective

- Background**
 - Prior reports of the risk of death in diabetic dialysis patients has indicated higher risks for hemoglobin A1c (HbA1c) <6.5% and >8.0%
 - It is still unclear what the best target glycemic control level is for Asians, in whom a sharp increase in diabetes as ESRD cause is ongoing.
- Objective**
 - Examine the association between HbA1c and mortality in Japan.

Methods

- Study Population:** N=2,173 diabetic patients on maintenance hemodialysis (HD) with HbA1c measured near enrolment in Japanese Dialysis Outcomes and Practice Patterns Study (JDOPPS) phase 2-5 (2002-2014)
- Analysis:**
 - Model:** Cox regression
 - Outcome:** Mortality
 - Exposure:** HbA1c categories
 - Adjustments:** age, gender, vintage, 12 comorbid conditions, hemoglobin, albumin, creatinine, insulin use, stratified by phase, and accounting for facility clustering

Results

Figure 1: HbA1c levels, by phase among JDOPPS diabetic patients

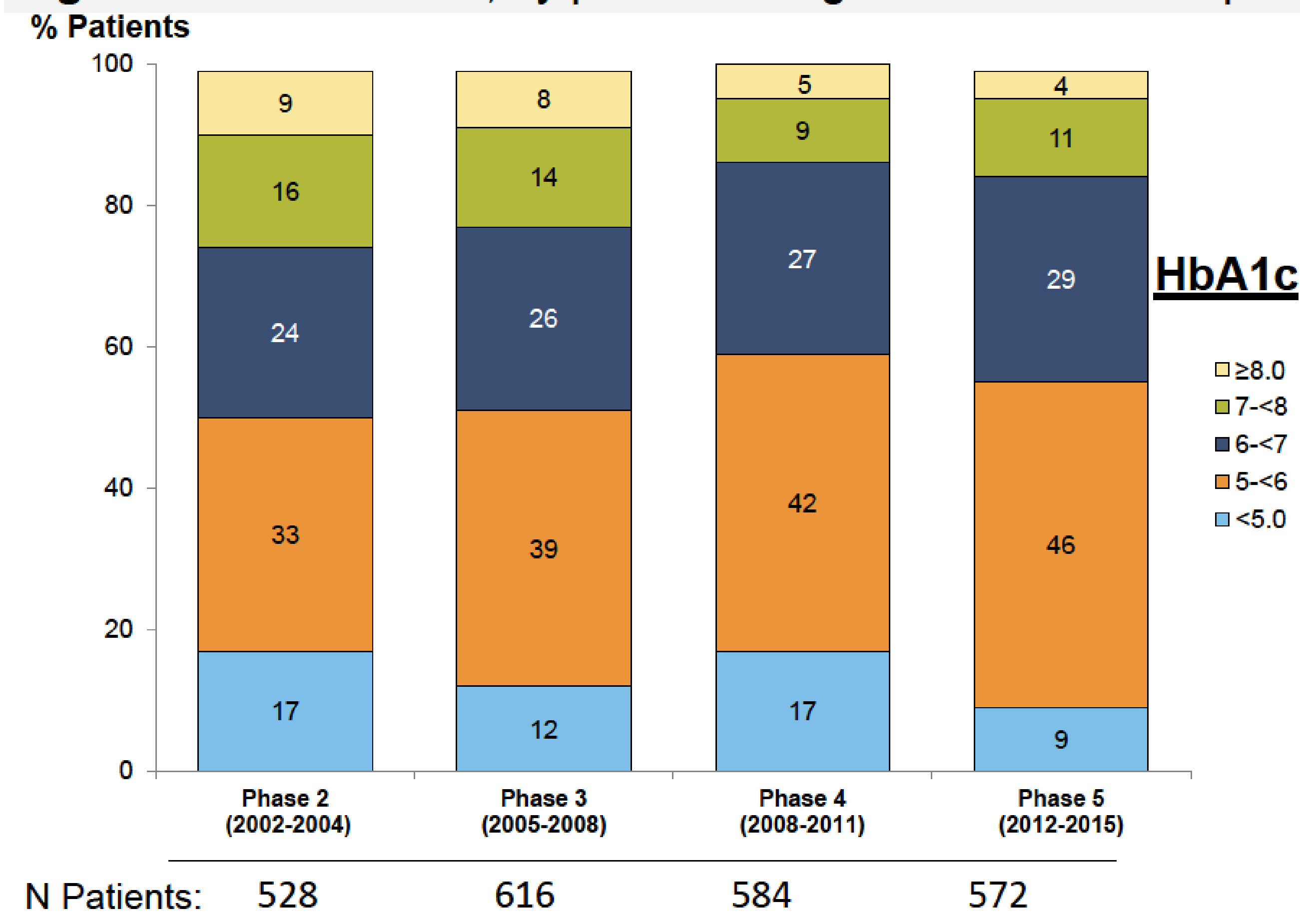


Figure 2: HbA1c categories and mortality among JDOPPS diabetic patients

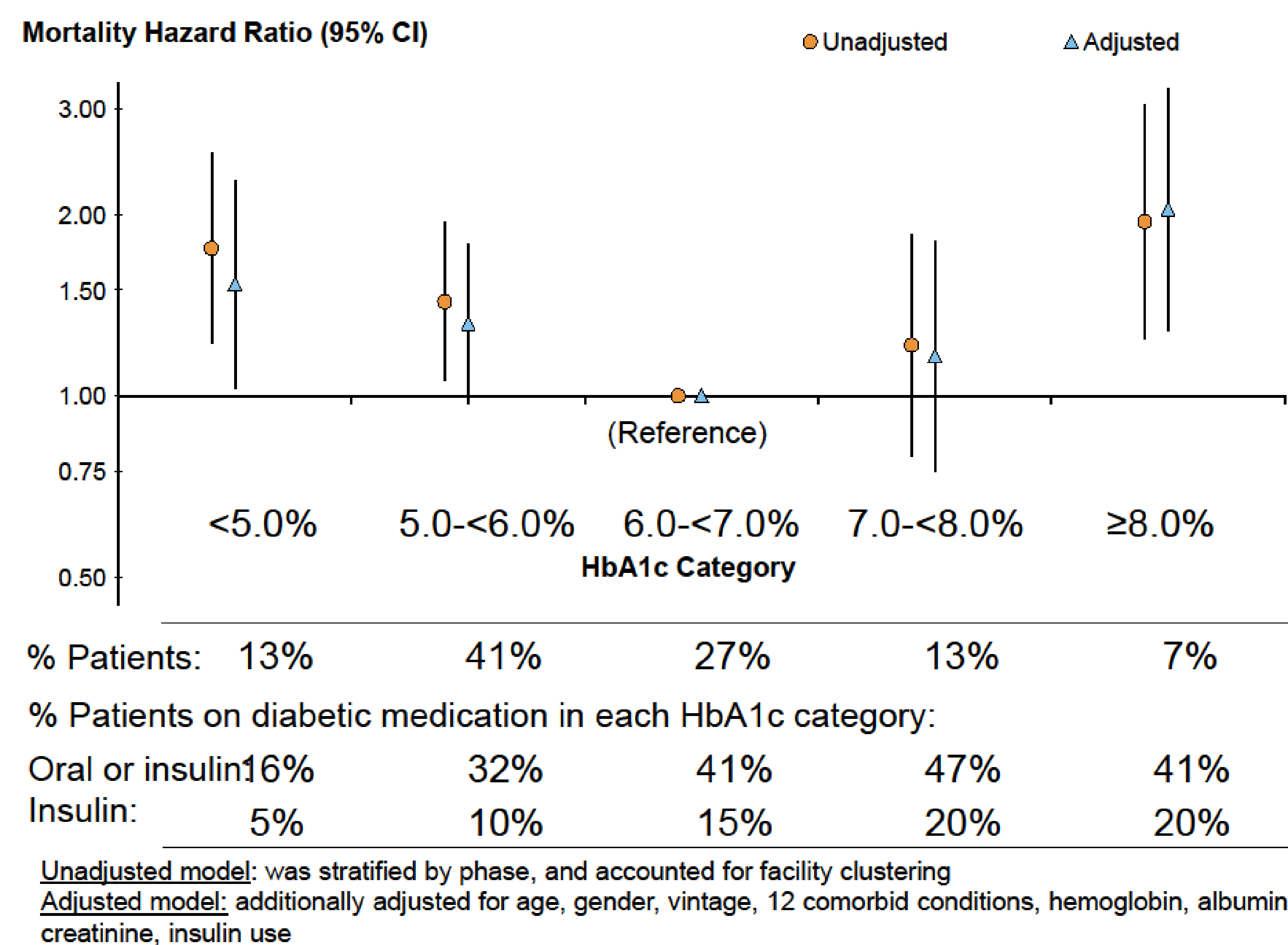


Table 1: Patient Characteristics

	HbA1c Category				
	<5.0	5-6	6-7	7-8	≥8.0
Total sample, N	313	931	617	284	155
Demographics and labs:					
Gender: % Male	73%	74%	68%	65%	59%
Age (years)	65.4(11.2)	65.2(10.7)	63.7(10.5)	63.3(10.7)	60.7(11.3)
Vintage (years)	3.4(3.9)	3.3(3.9)	3.6(4.1)	4.1(4.2)	3.9(3.9)
BMI (kg/m ²)	21.7(3.6)	22.0(3.5)	22.0(3.3)	22.0(3.6)	21.8(3.6)
Creatinine (mg/dL)	9.3(2.7)	9.3(3.0)	9.6(2.8)	9.4(2.8)	9.4(2.8)
Albumin (g/dL)	3.62(0.55)	3.68(0.48)	3.69(0.45)	3.71(0.45)	3.66(0.49)
CRP (median[QR], mg/L) *	1.00[3.35]	1.00[2.60]	1.50[3.50]	1.55[2.50]	2.00(3.70)
Comorbidities:					
Coronary Heart Disease	39%	40%	36%	39%	48%
Cancer other than skin	12%	11%	8%	7%	7%
Other Cardiovascular	33%	31%	26%	29%	28%
Cerebrovascular Disease	19%	18%	15%	16%	14%
Congest Heart Failure	28%	28%	28%	32%	37%
GI Bleeding	7%	6%	5%	3%	5%
Hypertension	86%	84%	83%	84%	83%
Lung Disease	3%	4%	3%	4%	3%
Neurologic Disease	12%	9%	8%	8%	8%
Psychiatric Disorder	6%	5%	5%	7%	7%
Peripheral Vascular Disease	20%	24%	26%	29%	30%
Recurrent Cellulitis, Gangrene	5%	7%	9%	10%	10%
Percent Patients on Medication:					
Diabetes medication (insulin or oral)	18%	32%	41%	46%	41%
Insulin	5%	10%	15%	20%	21%
Oral diabetes medication (1)	13%	23%	28%	29%	22%
Poor Nutrition marker (BMI<17.5 or Alb<3 or cachectic)					
BMI <17.5	11%	6%	9%	11%	11%
Albumin <3.0	10%	6%	5%	6%	8%
Cachectic	10%	6%	4%	4%	5%

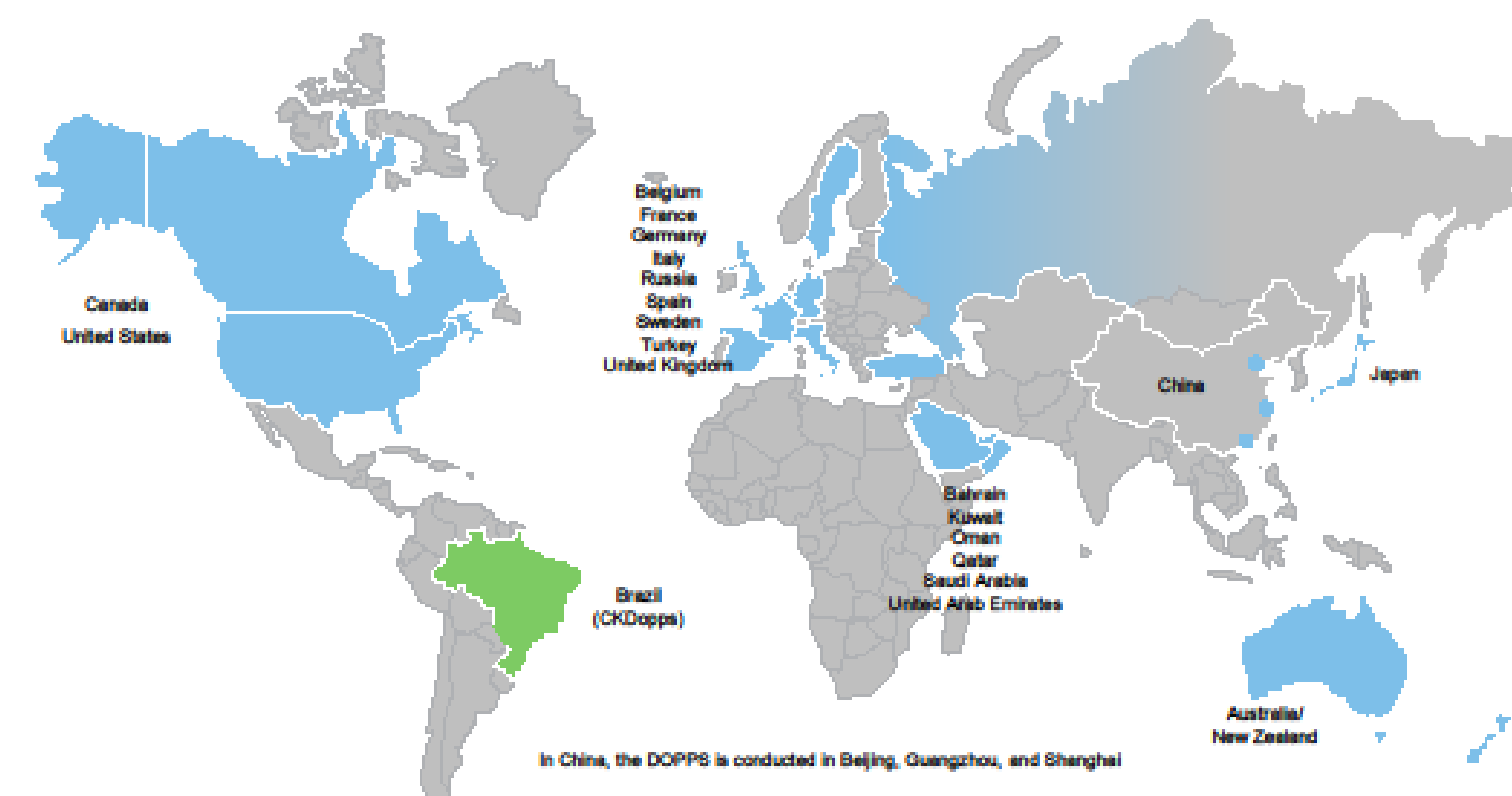
Statistics shown as mean (standard deviation) or prevalence
 *CRP median is restricted to facilities with at least 50% patients had CRP reported.
 (1) Oral diabetes medication included the following classes of medications: Alpha glucosidase inhibitors, Meglitinides, Metformin, Sulfonylurea, Thiazolidinediones

- Surprisingly, 54% of diabetic Japanese HD patients had HbA1c<6.0% overall (55-60% in phases 4 and 5 [2009-2015]), including 13.2% with HbA1c<5%. By contrast, in recent monthly US-DOPPS Practice Monitor results for years 2010-2015, only 32-39% of US diabetic HD patients had a HbA1c<6%, (4-8% with HbA1c<5%).
- In Japan, insulin or oral diabetes medication prescription was lower for diabetics with lower HbA1c (16% among patients with HbA1c <5% vs 42% among patients with HbA1c ≥6%).
- A "U-shaped" association was seen between HbA1c and mortality, with lowest mortality seen at HbA1c levels of 6-7% (Fig.2)

Summary / Conclusions

- Although mortality in the Japanese dialysis population is lower than other countries, our study found that the majority of Japanese diabetic HD patients had HbA1c <6.0% and higher mortality is observed for these patients.
- Conclusion:** Understanding the reasons for the higher mortality rates seen for the large fraction of diabetic HD patients having HbA1c<6.0% in Japan and elsewhere may illuminate important practice changes for improving outcomes for diabetic HD patients

DOPPS The Dialysis Outcomes and Practice Patterns Study



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):** ~500 facilities and 17,000 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
- The DOPPS Program is supported by research grants from Amgen (founding sponsor, since 1996), Kyowa Hakko Kirin (since 1999, in Japan), AbbVie Inc. (since 2009), Sanofi Renal (since 2009), Baxter Healthcare (since 2011), and Vifor Fresenius Medical Care Renal Pharma, Ltd (since 2011). Additional support is provided for specific projects and/or countries by a number of organizations. Additional information and slides available at www.dopps.org.
- Support for the DOPPS Program is provided without restrictions on publications.
- The DOPPS is coordinated by Arbor Research Collaborative for Health, Ann Arbor, MI USA.

Abstract #: SP388

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