Chronic Kidney Disease and Commercial Motor Vehicle Driver Safety

Findings of Evidence Report

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Current Regulations

- Currently, no regulations exist that specifically address CMV drivers with CKD.

Issue Considered

- What is the impact of CKD on CMV driver safety?

Chronic Kidney Disease and Driver Safety

- Potential threats to driver safety among individuals with chronic kidney disease (CKD) related to the following factors:
  - Fatigue
  - Daytime sleepiness
  - Neurocognitive symptoms
  - Cardiovascular events
  - Hypoglycemia (individuals with diabetes)

Searches

Name of database	Date limits	Platform/provider
CINAHL (Cumulative Index to Nursing and Allied Health Literature)	Through September 12, 2007	OVID
Cochrane Library	Through 2007 Issue 3	www.thecochranelibrary.com
Embase (Excerpta Medica)	Through September 12, 2007	OVID
Medline	Through September 12, 2007	OVID
PubMed (Pre Medline)	Through September 12, 2007	www.pubmed.gov
TRIS Online (Transportation Research Information Service Database)	Through September 12, 2007	http://trisonline.bts.gov/search.cfm
PsycINFO	Through September 12, 2007	OVID
National Guideline Clearinghouse™ (NGC™)	Searched September 21, 2007	www.ngc.gov
Health Technology Assessment Database (HTA)	Through 2007 Issue 3	www.thecochranelibrary.com

CKD and Driver Safety– Crash Data

- Two studies (median quality: low) with 94 drivers with CKD provided crash data
- Neither study provided evidence for increased crash risk among drivers with CKD

Driver Safety in Pre-Dialysis (Stage 1-4 CKD) Patients

- No studies were identified that examined any measures of driver safety in predialysis patients

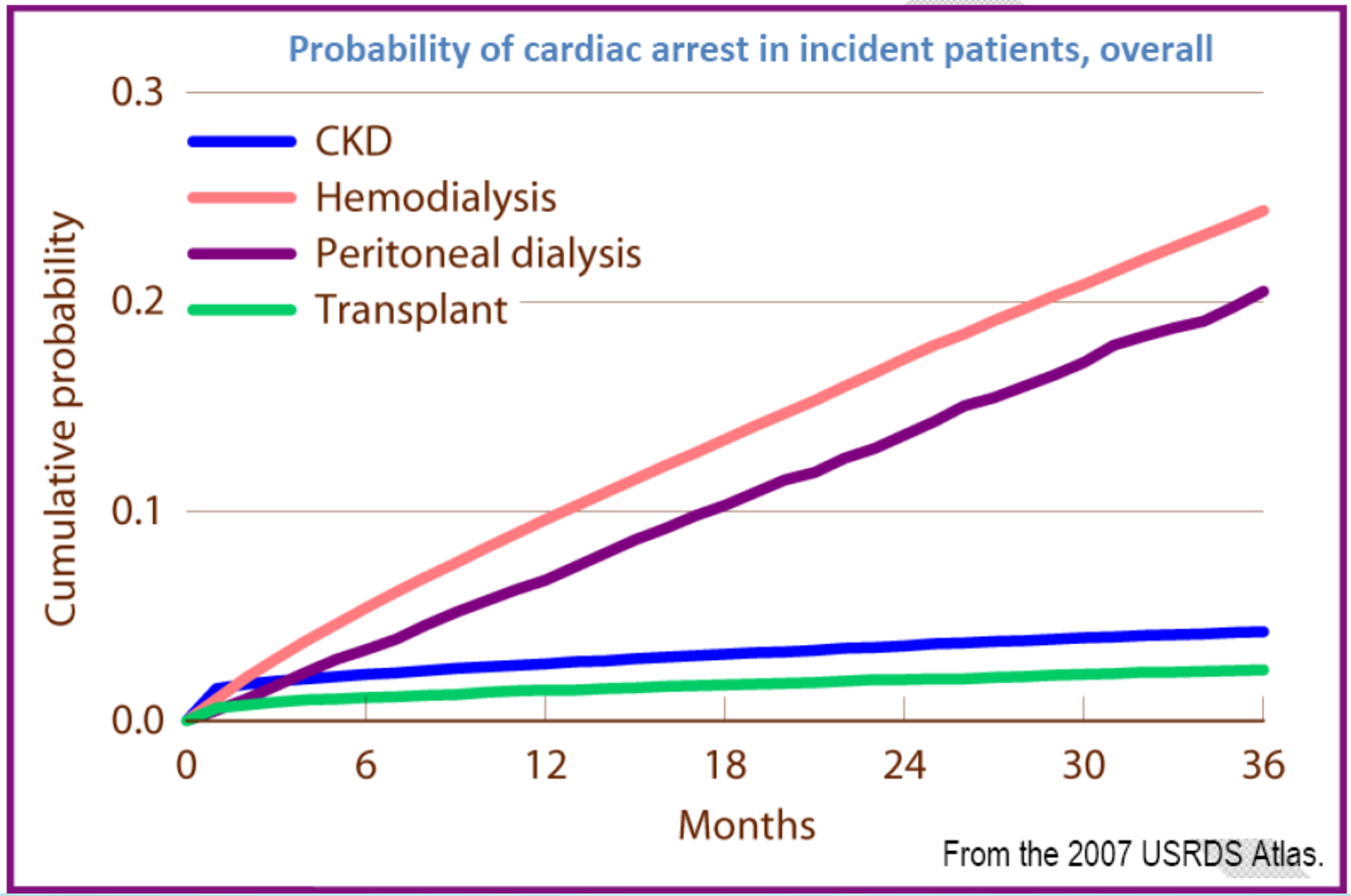
Driver Safety in Dialysis Patients

- No crash studies identified
- No simulator studies identified
- Neurocognitive function: 13 studies (N=980)
- Sleep-related outcomes: 3 studies (N=70)

Driver Safety in Dialysis Patients

- *Neurocognitive function:*
  - Evidence suggests that patients undergoing dialysis have impaired neurocognition when compared to patients without CKD
  - Evidence also suggests that patients on hemodialysis may be more impaired the day before dialysis than the day after
- *Sleep-related outcomes:*
  - Sleep-disordered breathing 4 times more prevalent among individuals undergoing hemodialysis than among general population

Driver Safety in Dialysis Patients



Driver Safety in Dialysis Patients

- While crash data is not available, indirect evidence suggests that drivers with end-stage CKD treated with dialysis and related medications are at an increased risk of motor vehicle crash
- It is unclear whether the type of dialysis used (peritoneal or hemodialysis) has an impact

Kidney Transplantation and Driver Safety

- No crash studies identified
- No driving simulator studies identified
- *Neurocognitive function:*
  - 2 studies (quality: low) with a total of 43 renal transplant recipients
  - Both studies found small improvements in neurocognitive function when compared to pretransplant measurements

Kidney Transplantation and Driver Safety

- *Sleep-related outcomes:*
  - A single moderate-quality study with 841 renal transplant recipients
  - Findings suggest that a substantial proportion (about one-quarter) of renal transplant recipients may be at risk for sleep apnea