



KDIGO Controversies Conference

Drug Prescribing in Kidney Disease: Initiative for Improved Dosing

May 14-15, 2010

**Hilton-Inner Harbor Hotel
Baltimore, Maryland, USA**

Background:

Kidney disease, both acute kidney injury (AKI) and chronic kidney disease (CKD), affects every organ system in the body. The physiological changes associated with kidney disease profoundly alter the pharmacology of many drugs. Caregivers must assess kidney function and consider how decreased kidney function changes the disposition of drugs and their active or toxic metabolites. Hypertension, diabetes mellitus, and heart disease frequently compound the management of drugs in patients with kidney disease.

The number of patients with AKI and CKD has increased. Advances in the treatment of acute and chronic disease in general have permitted patients to live longer. Many of them develop decreased kidney function over time. Indeed, kidney function decreases with age, and older patients make up the most rapidly growing patient group for which an understanding of drug disposition is important. When chronic kidney failure occurs, age, diabetes mellitus, and coronary artery disease are no longer barriers to renal replacement strategies.

Novel strategies for treating acute and chronic kidney failure contribute to the need for understanding drug removal during extracorporeal therapies. New dialysis membranes and devices, acceptance of intermittent and continuous peritoneal dialysis, and the application of continuous extracorporeal renal replacement therapies require better understanding of drug transport across biological and artificial membranes.

Proposal:

Kidney Disease Improving Global Outcomes (KDIGO) is convening a Controversies Conference, “Drug Prescribing in Kidney Disease: Initiative for Improved Dosing”. The purpose of this conference is to explore our understanding of drug disposition in patients with AKI and CKD, and to develop rational approaches to pharmacotherapy

with practical recommendations for individualized drug dosing. Specifically, the conference will address some key aspects of drug prescribing in CKD. There is a need to develop a consistent framework around which drug dosing recommendations can be established. Authoritative sources vary in their recommendations and discrepancies between their recommendations are evident.

There will be four major areas of discussion: 1) Effects of impaired kidney function on drug disposition, 2) Patient assessment for drug dosing, 3) Calculating drug doses in CKD, 4) Drug removal by renal replacement therapy.

- 1) Effects of impaired kidney function on:
 - a) Absorption and bioavailability
 - b) Drug distribution
 - c) Drug metabolism and transport
 - d) Excretion of drug and metabolites
- 2) Patient assessment for drug dosing
 - a) Focusing on specific therapy
 - b) Estimating extra-cellular fluid volume
 - c) Estimating kidney function
 - d) Determining other organ function
 - e) Effects of the aging kidney on drug therapy
- 3) Calculating drug doses in CKD
 - a) Loading dose
 - b) Maintenance doses
 - c) Decrease individual doses
 - d) Prolong dose interval Dosing
 - e) Considerations for specific drug categories in CKD
 - f) Dosing considerations for specific drug categories in CKD
 - g) Drug level monitoring in CKD
 - h) Tools for individualization of drug therapy
- 4) Drug removal by renal replacement therapy
 - a) Factors effecting clearance
 - b) Drug related
 - c) Procedure related
 - d) Drug replacement and timing



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**Baltimore Hilton-Inner Harbor
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Conference Program

Thursday, May 13

8:00 – 9:30 pm

8:00 – 9:30 pm

Welcome Reception

LOCATION

Ruth Room

DAY 1 AGENDA

Friday, May 14

07:30 am – 5:00 pm

7:30 – 8:00 am

Continental Breakfast

LOCATION

Holiday 6 Room

Introduction: Meeting Overview

8:00 – 8:30 am

Welcome and Introductions

Bertram Kasiske, KDIGO Co-chair

8:30 - 8:40 am

KDIGO – Past, Present, and Future

Kai-Ewe Eckardt, KDIGO Co-chair

8:40 – 9:00 am

Objectives and Output of the Meeting

George Aronoff and Patrick Murray (Conference Chairs)

Plenary Sessions:

Session Moderators: George Aronoff and Patrick Murray

(Each speaker provides a 20 minute presentation followed by 10 minutes discussion time)

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|------------------|--|
| 9:00 – 9:30 am | Effects of impaired kidney function on drug pharmacokinetics and pharmacodynamics
Presenters: William Bennett and Domenic Sica |
| 9:30 – 10:00 am | Patient assessment for drug dosing
Presenters: Stuart Goldstein and Frieder Keller |
| 10:00 – 10:30 am | Calculating drug doses in CKD
Presenters: Darren Grabe and Lesley Stevens |
| 10:30 – 10:50 am | Break |
| 10:50 – 11:20 am | Calculating drug doses in AKI
Presenters: Brian Decker and Deborah Pasko |
| 11:20 – 11:50 am | Drug removal by intermittent renal replacement therapies
Presenter: Arthur Atkinson and Jason Umans |
| 11:50 – 12:20 pm | Drug removal by continuous renal replacement therapy and hybrid therapies
Presenters: Jan Kielstein and Bruce Mueller |
| 12:20 – 1:00 pm | Lunch |
| 1:00 – 1:30 pm | Drug removal by peritoneal dialysis
Presenters: Thomas Golper and Franz Schaefer |
| 1:30 - 2:00 pm | Drug dosing in patients with multiple organ dysfunction
Presenters: Gary Matzke and Ravindra Mehta |
| 2:00 – 2:10 pm | Discussion and intro to break out sessions |
| 2:10 – 2:30 pm | Break |

2:30 – 6:00 pm

Breakout Session

Group One: Effects of impaired kidney function on drug pharmacokinetics and pharmacodynamics

Discussion Leaders: Domenic Sica and Suzanne Swan

Group Two: Patient assessment for drug dosing

Discussion Leaders: Stuart Goldstein and Frieder Keller

Group Three: Calculating drug doses in CKD

Discussion Leaders: Darren Grabe and Lesley Stevens

Group Four: Calculating drug doses in AKI

Discussion Leaders: Brian Decker and Deborah Pasko

Group Five: Drug removal by intermittent renal replacement therapy

Discussion Leaders: Arthur Atkinson and Jason Umans

Group Six: Drug removal by continuous renal replacement therapy and hybrid therapies

Discussion Leaders: Jan Kielstein and Bruce Mueller

Group Seven: Drug removal by peritoneal dialysis

Discussion Leaders: Thomas Golper and Franz Schaefer

Group Eight: Drug dosing in patients with multiple organ dysfunction

Discussion Leaders: Gary Matzke and Ravindra Mehta

6:00 pm

Adjourn (Workgroup Discussion leaders meet to develop presentation on recommendations)

7:30 – 9:30 pm

Group Dinner

Meet in hotel lobby 7:15 pm



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DAY 2 AGENDA

Saturday, May 15

7:30 am to 3:30 pm

7:30 – 8:00 am

Continental Breakfast

**LOCATION
Holiday 6 Room**

8:00 – 9:00 am

Breakout Sessions Resume

Group One: Effects of impaired kidney function on drug pharmacokinetics and pharmacodynamics

Discussion Leaders: Domenic Sica and Suzanne Swan

Group Two: Patient assessment for drug dosing

Discussion Leaders: Stuart Goldstein and Frieder Keller

Group Three: Calculating drug doses in CKD

Discussion Leaders: Darren Grabe and Lesley Stevens

Group Four: Calculating drug doses in AKI

Discussion Leaders: Brian Decker and Deborah Pasko

Group Five: Drug removal by intermittent renal replacement therapies

Discussion Leaders: Arthur Atkinson and Jason Umans

Group Six: Drug removal by continuous renal replacement therapy and hybrid therapies

Discussion Leaders: Jan Kielstein and Bruce Mueller

Group Seven: Drug removal by peritoneal dialysis
Discussion Leaders: Thomas Golper and Franz Schaefer

Group Eight: Drug dosing in patients with multiple organ dysfunction
Discussion Leaders: Gary Matzke and Ravindra Mehta

9:00 – 10:00 am **Break/Checkout** (Breakout Group Leaders finalize presentation on recommendations)

Presentation and Discussion of Recommendations (Breakout group discussion leaders provide 20 minute presentations on recommendations from their group, followed by 10 minute discussion period)

LOCATION
Holiday 6 Room

10:00 – 10:30 am **Group 1 Presentation**

10:30 – 11:00 am **Group 2 Presentation**

11:00 - 11:30 am **Group 3 Presentation**

11:30 - 12:00 am **Group 4 Presentation**

12:00 – 12:30 am **Group 5 Presentation**

12:30 – 1:00 pm **Working Lunch**

1:00 – 1:30 pm **Group 6 Presentation**

1:30 - 2:00 pm **Group 7 Presentation**

2:30 - 3:00 pm **Group 8 Presentation**

3:00 - 3:30 pm **Wrap up and outline of tasks for drafting of position statement**

3:30 pm **Adjourn** (Departures)