BioTrends RESEARCH GROUP
A Decision Resources Group Company

REPORT OVERVIEW

CHARTTRENDS®: BONE AND MINERAL IN DIALYSIS AND CKD-ND (EU5) 2012

ChartTrends®: Bone and Mineral Metabolism in Dialysis and CKD-ND (non-dialysis) in the EU5 is a syndicated report that captures patient level data from 928 unique late stage (Stage 3 / Stage 4 / Stage 5 not on dialysis) Chronic Kidney Disease (CKD) patient records and 962 unique dialysis patient records. ChartTrends® are syndicated reports designed to compare what physicians self-report about disease management to what actually occurs at the patient level. Through an in-depth review of specific patient charts, details such as product dosing and titration, switching, concomitant medications, and a host of laboratory and patient demographic variables help define patient types and identify therapy triggers. This report includes trending from prior waves.

SAMPLE FRAME AND METHODOLOGY

191 Nephrologists submitted 928 CKD-ND Patient Chart Records and 210 Nephrologists submitted 962 Dialysis Patient Chart Records

Nephrologist Screening Criteria:

- In practice between 2 and 35 years
- Minimum of numbers of adult CKD Stage 3, 4, 5 (not on dialysis) patients under management and dialysis patients under management

Patient Criteria:

- Between 18-89 years of age
- CKD Stage 3, 4, or 5 not on dialysis
- Dialysis modality: In-center HD or PD
- On dialysis at least six months

All collection methods are designed in compliance with local privacy laws

PRODUCT COVERAGE

Phosphate binders, Active Vitamin D, Nutritional Vitamin D, Mimpara

RELATED REPORTS

TreatmentTrends®: Bone and Mineral Metabolism (EU)

ChartTrends®: Bone and Mineral Metabolism in Dialysis (US)

ChartTrends®: Bone and Mineral Metabolism in CKD-ND (US)

PROJECT OBJECTIVES

- Quantify the CKD population (later-stage 3, 4, 5) currently under the care of a Nephrologist
  - Understand referral patterns, emergent versus managed dialysis initiation, use of the KDOQI/KDIGO guidelines, frequency of contact and follow up, laboratory tests and frequency of measurement
- Understand the characteristics of CKD-ND (stage 3, 4, 5) and dialysis patients currently under the care of a nephrologist
  - Understand referral patterns, frequency of contact and follow up, laboratory tests and frequency of measurement, as well as use of the KDOQI/KDIGO guidelines,
  - Patient co-morbidities, patient characteristics, and hospitalizations
  - Dialysis modality choices and vascular access
- Understand the treatment prevalence for phosphate binders, active vitamin D, nutritional vitamin D and calcimimetic agents in CKD and dialysis patients
  - Quantify the percent of patients in Stage 3, Stage 4, Stage 5 (not on dialysis), HD and PD who are receiving phosphate binders, active vitamin D, nutritional vitamin D, and Mimpara
  - Understand the percent of patients who should be treated according to lab values and KDOQI/KDIGO targets, but are not
  - Understand the triggers that prompt the use of bone and mineral metabolism agents (i.e. co-morbidities, lab values, etc.)
  - Understand the differences between treated and non-treated patients
- Understand bone and mineral metabolism treatment choices in CKD and Dialysis patients
  - What factors drive product selection (i.e. co-morbidities, concomitant therapies, lab values, etc.)
  - Capture product dosing and titration
  - Capture switching behavior and reasons for switches
- Identify gaps in intended vs. actual treatment by comparing self-reported survey responses with actual treatment records

DELIVERABLES

- Final report in Powerpoint format
- Patient record database (in SPSS or Excel)

REPORT DATES

Fielding	Publication date
Dialysis Audit: October 17, 2012 to November 27, 2012 CKD-ND Audit: November 2, 2012 to November 28, 2012	December 28, 2012

For more information, or the full report, please contact Alexander Cline, Account Manager at 781-993-2662 or acline@dresources.com

Report ID: CHTRNE0512
Updated March 11, 2013

BioTrends RESEARCH GROUP
A Decision Resources Group Company

CHARTTRENDS®: BONE AND MINERAL METABOLISM IN DIALYSIS AND CKD-ND (EU5) 2012

TABLE OF CONTENTS

Introduction: Objectives, Background and Methodology ……... 4

- Research objectives and products and companies profiled
- Project background
- Methodology for the dialysis audit
- Methodology for the CKD-ND audit
- Study limitations
- Conversion factors for metric units

Executive Summary…….. 12

Market Landscape and Physician Demographics…….……. 17

- ESRD prevalence and incidence
- Dialysis modality by country
- Self-reported patient load
- Participant demographics (e.g., practice location, primary dialysis center affiliations and number of nephrologists and extended care providers in group) by country
- Professional time allocation
- Management importance in dialysis and CKD-ND

Patient Demographics and Co-Morbidities in Dialysis Patients …….. 29

- Dialysis patient modalities used
- Patient demographics (gender, months on dialysis, estimated months to renal replacement therapy, race and percent hospitalized in the past year)
- Vascular access procedures
- Pre-dialysis care (e.g., what percent is dialysis emergent vs. followed by a nephrologist prior to dialysis?)
- Kidney transplant list
- Primary cause of kidney disease
- Co-morbidities in dialysis patients (e.g., hypertension, dyslipidemia, type I and II diabetes, CHF, PAD, gout etc.)
- Other risk factors / characteristics of dialysis patients
- Number of blood transfusions and mean hemoglobin at time of most recent blood transfusion
- Percent of dialysis patients with hospitalizations in the past year and number of visits per year
- Hospital admission reasons and number days in spent in hospital (most recent visit)
- Physician perception of dialysis patient's compliance by country
- Dialysis audited treatment prevalence by EU5 and by country (HD vs. PD)
- Laboratory Values at Last Measure: Dialysis Patients

Patient Demographics and Co-Morbidities in CKD-ND Patients …….. 35

- Group practice management
- Patient distribution by stage
- Estimated months to renal replacement therapy (RRT)
- Primary cause of kidney disease in CKD-ND
- Co-morbidities in CKD-ND patients (e.g., hypertension, dyslipidemia, type I and II diabetes, CHF, PAD, gout etc.)
- Other risk factors / characteristics of CKD-ND patients
- Hypertension management in CKD-ND patients by country
- Who initiates hypertension medications?
- Percent of CKD-ND patients with hospitalizations in the past year and number of visits per year
- Hospital admission reasons and number days in spent in hospital (most recent visit)
- Physician perception of CKD-ND patient's compliance by country

TABLE OF CONTENTS (CONT'D)

Referral Patterns, Office Visits and Co-Management in CKD-ND 59

- Patient referral pathway by country
- Reasons for referral by country
- CKD-ND stage at time of first referral by country and by specialty
- CKD-ND lab values at referral and most recent
- Frequency of office visits
- Estimated months to RRT

Hyperphosphatemia Management - Phosphate Binder Market in Dialysis Patients 68

- Phosphorous levels at binder initiation in dialysis - EU5 and by country
- Phosphate binder treatment prevalence in dialysis: Reported vs. Audited - EU5 and by country
- Phosphate binder non-treated dialysis population (e.g., How many patients were previously treated vs. never treated?)
- Phosphorous levels at last measure
- Phosphate treatment prior to dialysis
- Phosphate binder treatment and co-morbidities in dialysis patients
- Phosphate binder treatment and patient characteristics in dialysis patients
- Percent of patients on binder monotheraphy vs. combination therapy
- Reasons why patients are on combination therapy
- Phosphate binder patient share: Reported vs. Audited - EU5 and by country
- First binder vs. current binder patient share
- Phosphate binder patient share by known or suspected calcification
- Phosphate binder treatment and most recent phosphorous labs
- Average daily dose (grams) by county in dialysis
- Average number of pills / packets per day by country in dialysis
- Fosrenol and Renvela strength/formulation
- Renvela powder use by country
- Persistency (months on therapy) by binder brand
- Phosphate binder and Active Vitamin D Cross-Over

Hyperphosphatemia Management - Phosphate Binder Market in CKD-ND 97

- Phosphorous target range and binder initiation
- Phosphorous levels at binder initiation in CKD-ND - EU5 and by country
- Phosphate binder treatment prevalence in CKD-ND: Reported vs. Audited - EU5 and by country
- Phosphate binder non-treated CKD-ND population by stage (e.g., How many patients were previously treated vs. never treated?)
- Phosphate binder in transition to dialysis (e.g., How likely is the patient to remain on current binder when transitioning to dialysis?)
- Phosphate binder treatment and co-morbidities in CKD-ND patients
- Phosphate binder treatment and patient characteristics in CKD-ND patients
- Phosphate binder treatment and other medication use
- Phosphate binder: Treated vs. non-treated patient profiles
- Testing frequency by stage of BMM measures
- Phosphate binder treatment and phosphorous labs throughout the year (e.g., what percent patients exceed 1.5 mmol/L?)
- Percent of patients on binder monotheraphy vs. combination therapy
- Phosphate binder patient share: Reported vs. Audited - EU5 and by country (includes by stage)
- Phosphate binder: Calcium vs. non-calcium-treated patient profiles
- First binder vs. current binder patient share

TABLE OF CONTENTS (CONT'D)

- Who initiates phosphate binder treatment?
- Fosrenol and Renvela strength/formulation
- Switching and dose adjustments in the past year by country
- Persistency (months on therapy) by binder brand
- Average daily and starting dose (grams) by county in CKD-ND

PTH Modifier Market in Dialysis Patients: Nutritional Vitamin D (NVD) 126
- NVD treatment prevalence: HD vs. PD
- NVD treatment prevalence over time: HD vs. PD
- NVD patient share (EU5 and by country): HD vs. PD
- Impact of NVD on Active Vitamin D (AVD)

PTH Modifier Market in Dialysis Patients: Active Vitamin D (AVD) 132
- PTH target ranges and PTH at AVD initiation
- AVD treatment prevalence: HD vs. PD
- AVD: reported vs. audited treatment prevalence by EU5 and by country
- Phosphate binder and AVD cross-over by modality
- AVD treatment history
- AVD treatment and other medication use
- Distribution of PTH levels at last measure in dialysis patients
- AVD treatment prior to dialysis
- IV vs. oral AVD use in dialysis patients
- First AVD vs. current AVD patient share
- Most recent lab values by AVD brand (calcium, phosphorous and PTH)
- AVD oral dosage forms
- AVD oral dosing frequency
- Brand switching and dose adjustments in the past year
- Persistency (months on therapy) by AVD brand
- Concomitant use with other BMM therapies

PTH Modifier Market in Dialysis Patients: Mimpara 153
- Mimpara treatment prevalence (reported vs. audited): HD vs. PD
- Audited mimpara treatment prevalence over time
- PTH at Mimpara initiation
- Mimpara non-treated dialysis population and reasons for mimpara discontinuation
- Mimpara PTH at last measure
- Mimpara treated vs. non-treated lab values at last measure by country
- Patient profile: Mimpara treated vs. non-treated
- Mimpara strength/formulation and dosing frequency in dialysis: EU5 and by country
- Mimpara treatment with AVD
- Use of Mimpara and phosphate binders in dialysis patients
- Dose of phosphate binder with and without Mimpara

PTH Modifier Market in CKD-ND Patients: Nutritional Vitamin D (NVD) 168
- NVD treatment prevalence: by stage
- NVD treatment prevalence over time: by stage
- NVD patient share (EU5 and by country): by stage
- Physician initiating NVD treatment
- Impact of NVD on Active Vitamin D (AVD)

TABLE OF CONTENTS (CONT'D)

PTH Modifier Market in Dialysis Patients: Active Vitamin D (AVD) …….. 174

- PTH target ranges and PTH at AVD initiation
- AVD treatment prevalence: by stage
- AVD: reported vs. audited treatment prevalence by EU5 and by country
- Phosphate binder and AVD cross-over by stage
- AVD treatment history
- AVD in transition to dialysis (e.g., How likely is the patient to remain on current binder when transitioning to dialysis?)
- Who initiates AVD treatment?
- CKD-ND treatment and lab values at referral
- AVD treatment and time followed / time to RRT
- AVD treatment and co-morbidities in CKD-ND patients
- AVD treatment and patient characteristics in CKD-ND patients
- AVD treatment and other medication use
- AVD: Treated vs. non-treated patient profiles
- Testing frequency by stage of BMM measures
- Distribution of PTH levels at last measure in CKD-ND patients
- Reported vs. audited AVD patient share (EU5 and by country)
- AVD dosing frequency
- AVD brand switching and dose adjustments in the past year
- Persistency (months on therapy) by AVD brand

PTH Modifier Market in Dialysis Patients: Mimpara …….. 196

- Mimpara treatment prevalence (reported vs. audited): by stage
- Audited mimpara treatment prevalence over time
- Mimpara strength/formulation and dosing frequency in dialysis: EU5 and by country

Appendix …….…….... 201