“In Touch – Leading & Succeeding In Renal Therapy”

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Sr. Executive Vice President Clinical & Scientific Affairs FMCNA

Capital Markets Day
Luton, September 1–2, 2010

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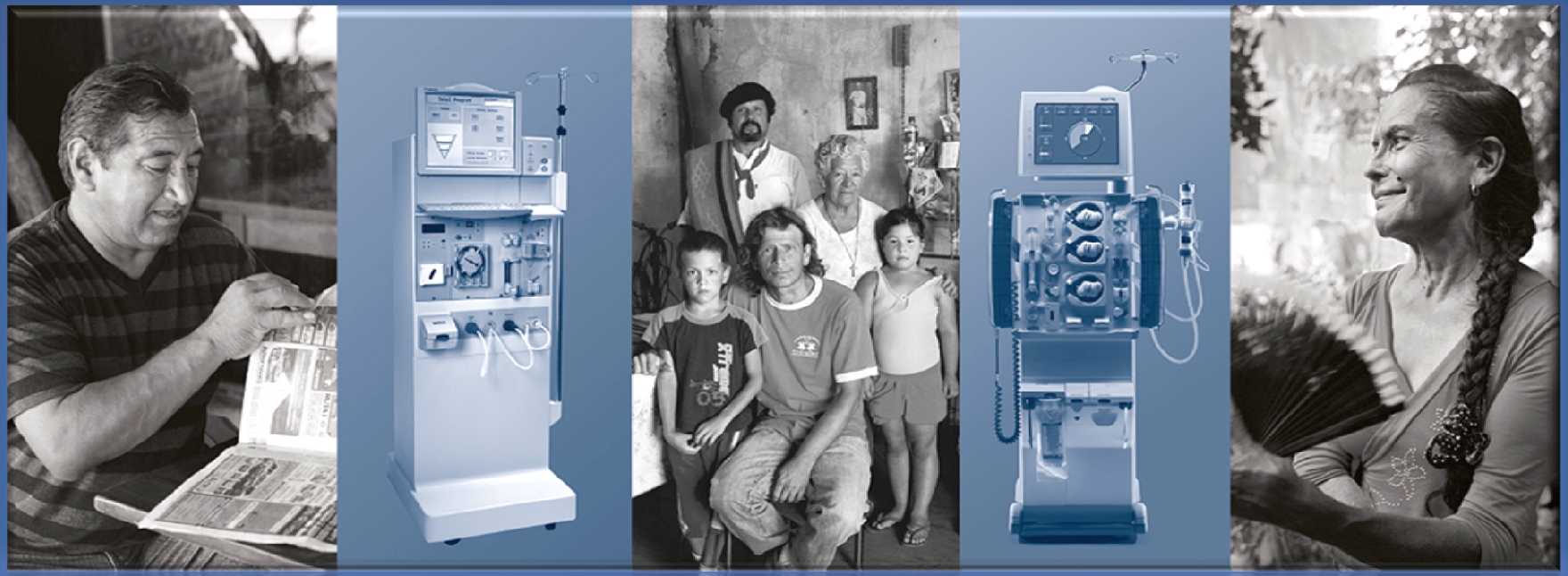

Doing Well by Doing Good

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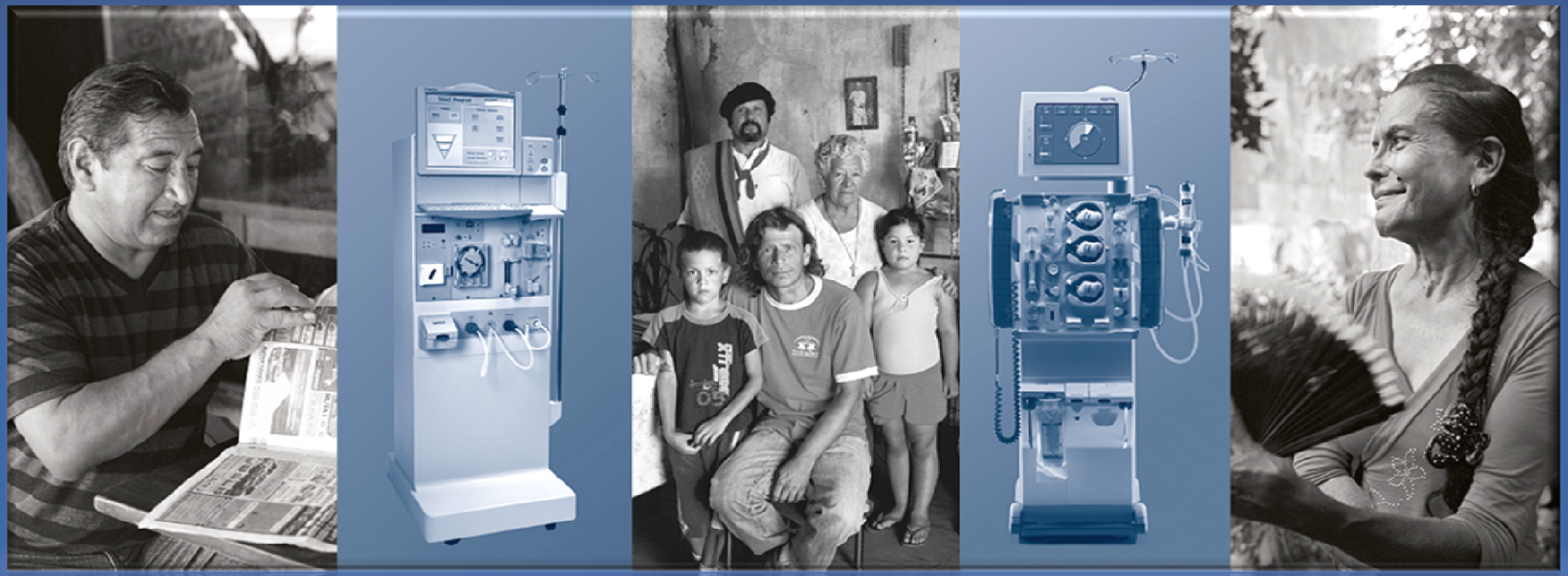

Improving Anemia Management & Outcomes

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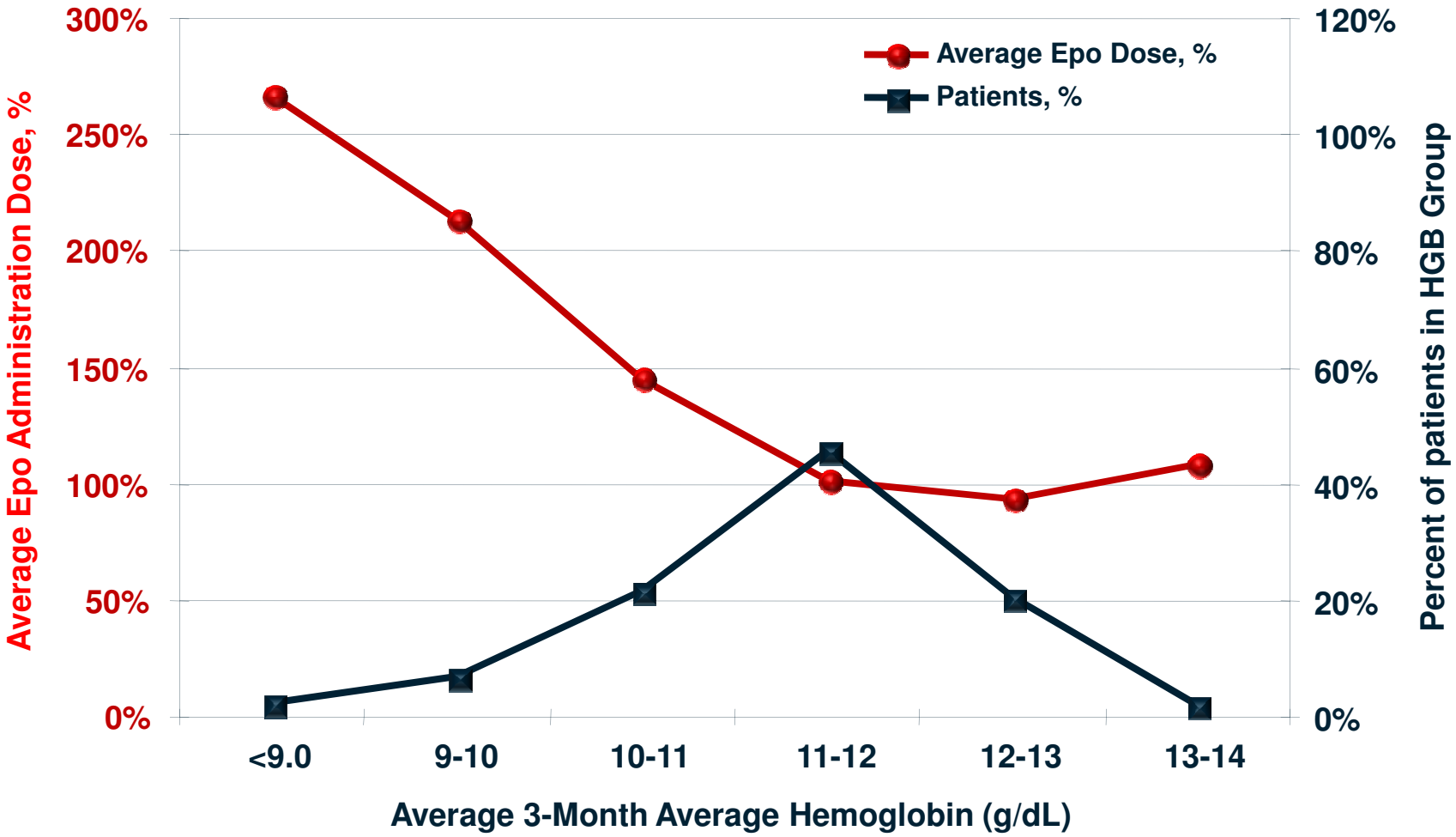
Optimization of Anemia Management

1. RightStart® at the initiation of dialysis
2. RightReturn® after Hospitalization
3. Catheter Reduction
4. Clinical research to reduce inflammation:
    a. Investigate the use of anti-inflammatory agents and ultrapure dialysate to improve Epogen responsiveness
5. Aim for an iron saturation (Tsat) of 30-50%
6. Computerized anemia management algorithm
7. Hemoglobin goal of 10.5 – 12.0 gm/dl (to avoid Hemoglobin <10 g/dl)

Optimization of Anemia Management

Epo Dose vs. Hemoglobin (Q2 2010)



Initiation Of Dialysis In The U.S.

- 57% had albumin concentration below lower limit of normal
- 50% had no visit with dietitian (21% had one visit)
- 80% of patients with Hgb<9 gm/dl were not receiving EPO
- 82% initiated dialysis with a catheter
- 18% had a permanent access 30 days before starting dialysis
- 53% used temporary access 60 days after initiation

Co-Morbidities and Risk Factors Associated with Early Mortality

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Co-Morbidity

- Age
- Nutritional Status
- Diabetes
- Cardiovascular Disease
- LVH

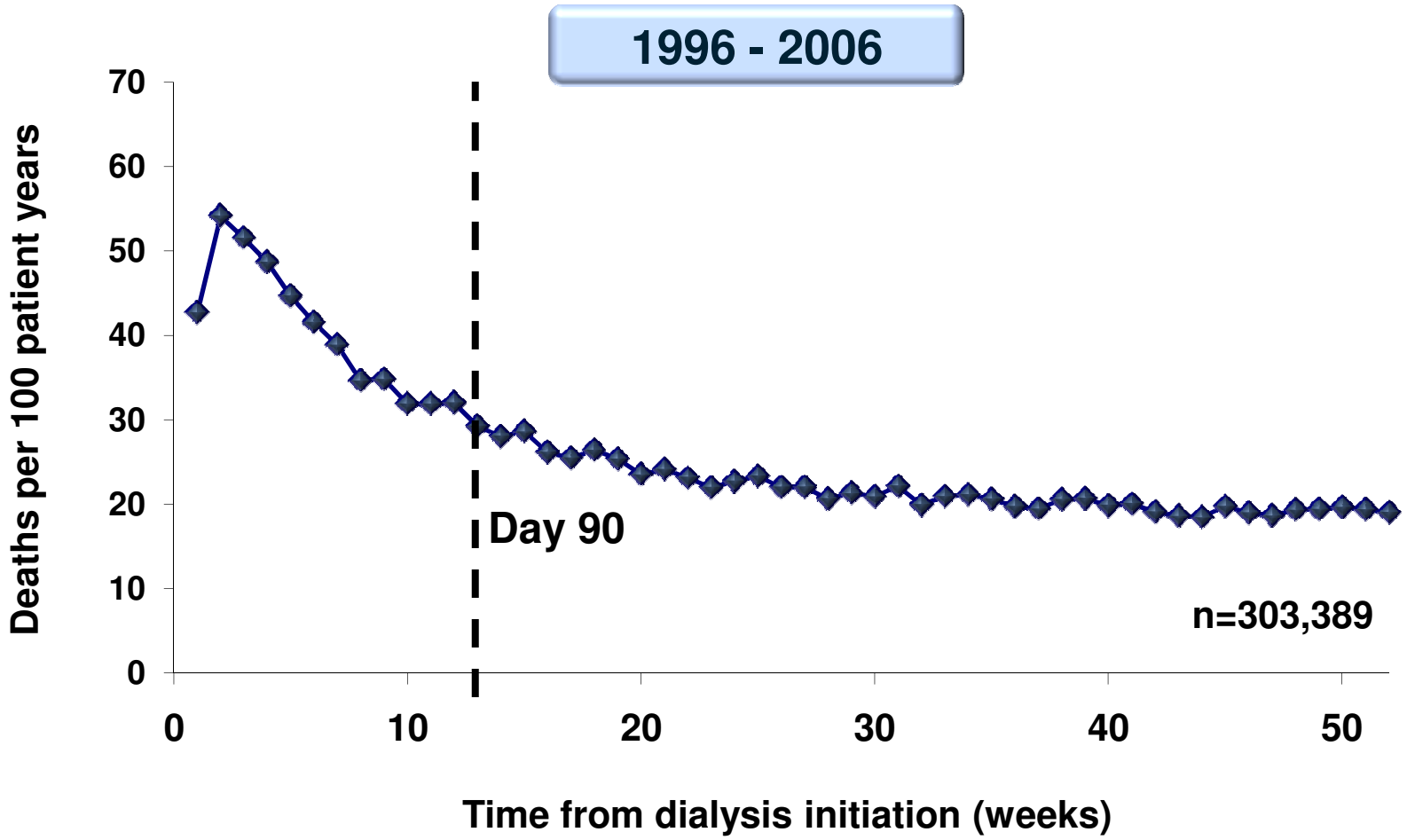
Risk Factors

- Unplanned start (w/o permanent access)
- Short (<4 months) prior nephrological care
- Low residual renal output

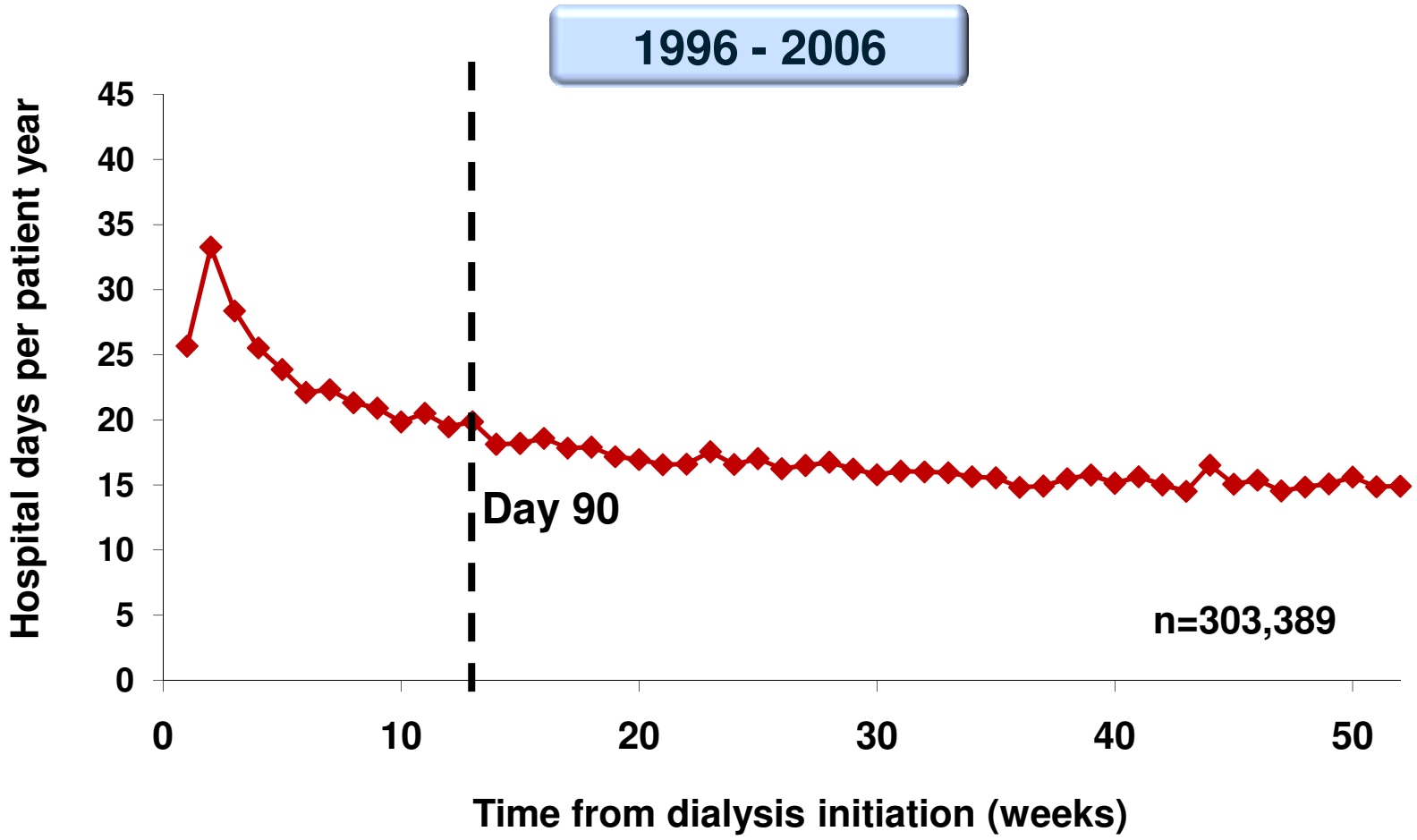
Reversible Risk Factors

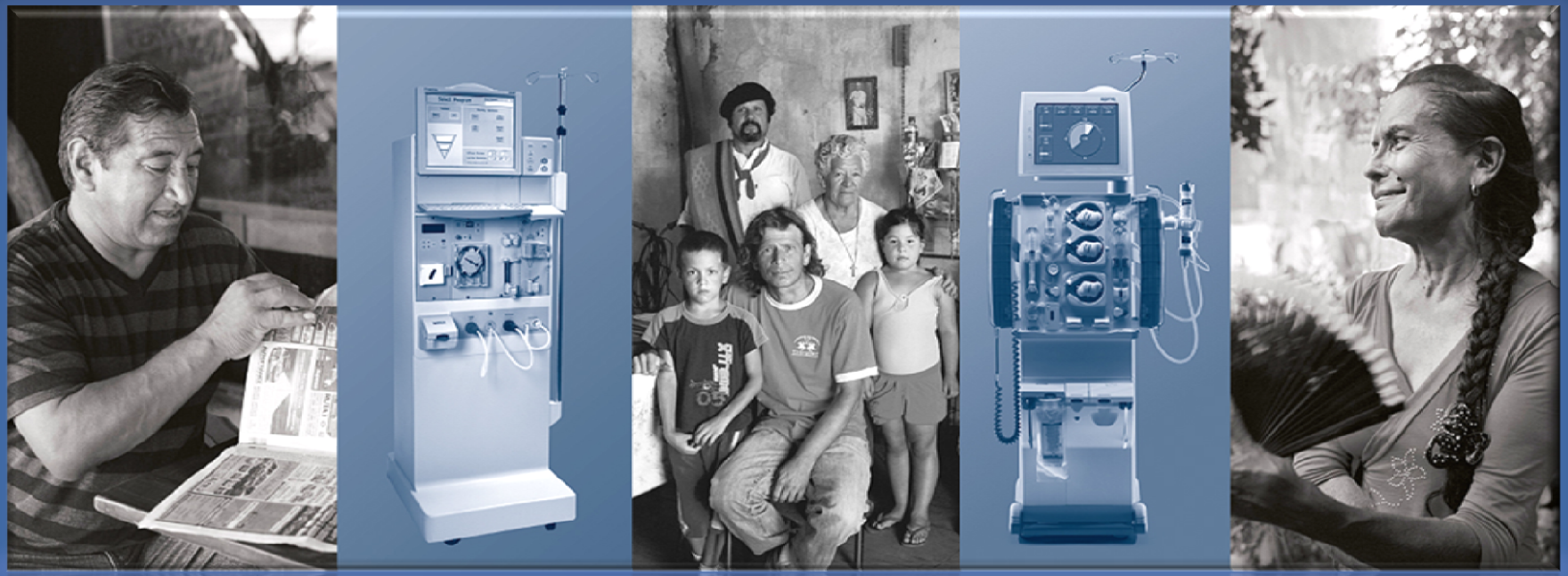
- High catheter rate
- Low albumin
- Anemia
- High Phosphorus
- Volume Overload

Mortality in Year One of Dialysis



Hospitalization in Year One of Dialysis





RightStart® Program

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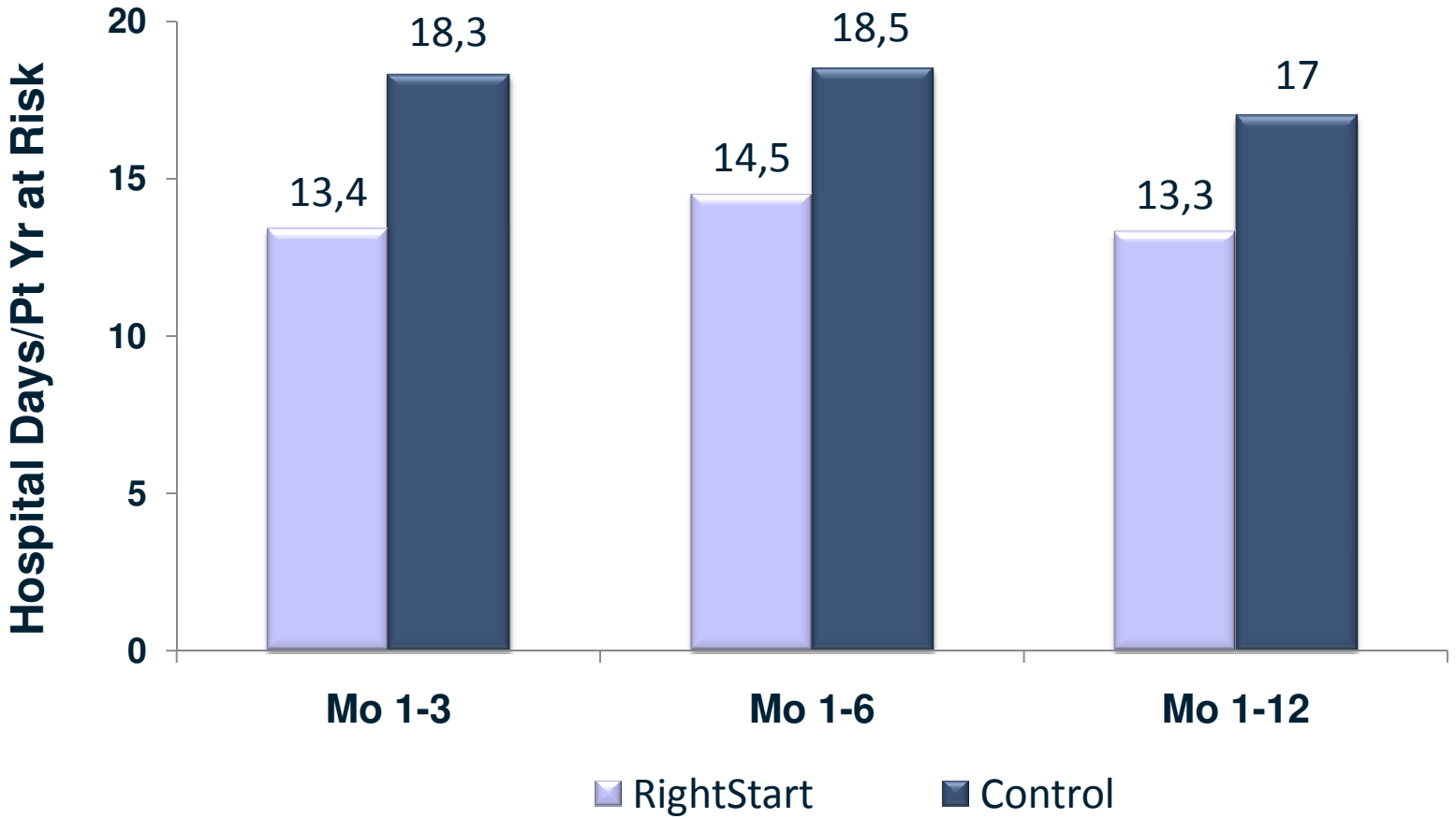
Hospital Days Per Patient Year at Risk



Survival of RightStart® Patients

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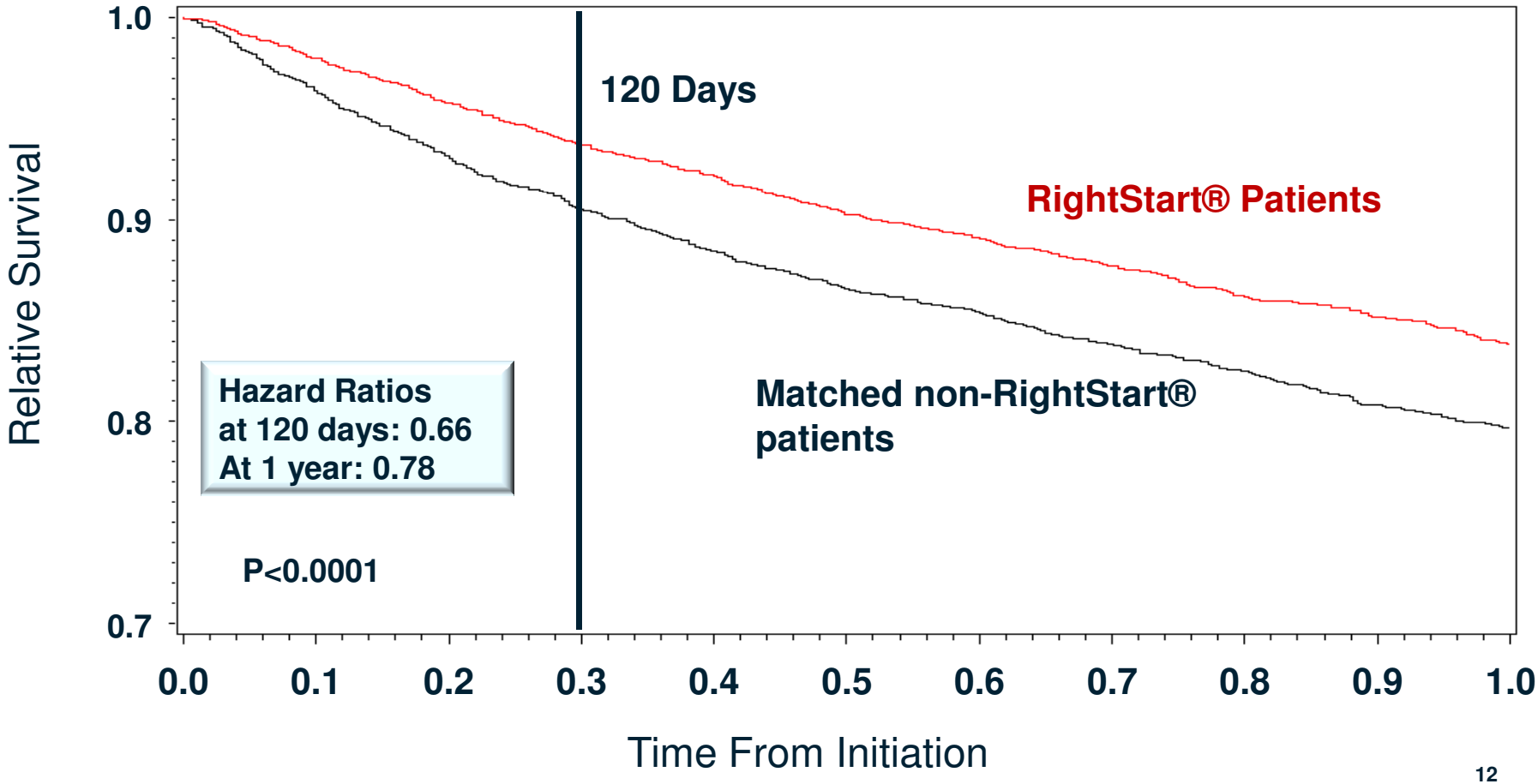
**One Year Survival of RightStart® Pts vs.
Case-Control matching, All Pts n=approx 8,000**



Advantages of the RightStart® Program

Number of new (incident) patients in US	100,000
Number of new (incident) patients in FMS	33,000
Current 1st Year Mortality (USRDS)	25.4%
Number incident pts at end of 1st year without RightStart®	24,618
Expected 1st Year Mortality with RightStart® (HR = 0.75)	19.0%
Number incident pts at end of 1st year with RightStart®	26,730
Lives Saved/Lives Extended from RightStart®	~ 2100 pts/Yr

RightStart® Program Summary

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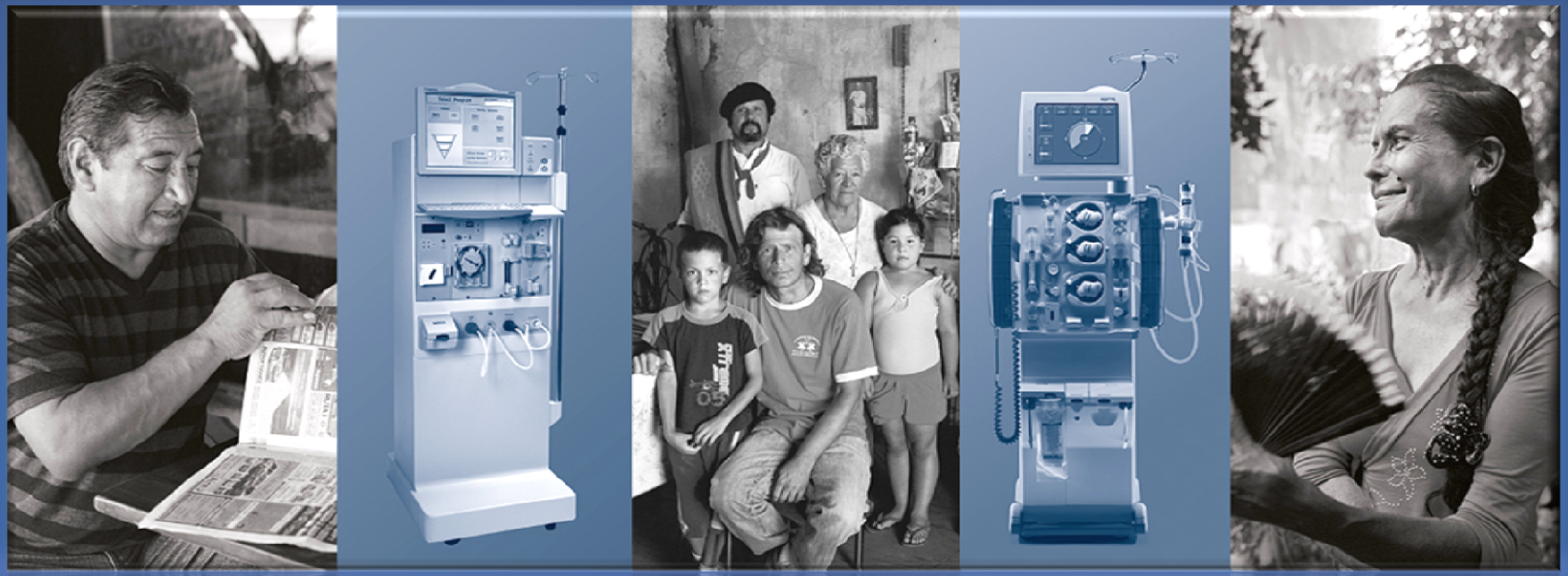
Patients initiating dialysis present with several co-morbidities and risk factors, and knowledge deficits that are associated with a high initial 90-day mortality rate, (generally not reflected in published data).

Several of these risk factors can be attenuated or reversed more rapidly with an intensive team effort during the initial 90 days of therapy.

The RightStart® program, consisting of focused attention on reversible risk factors and patient education, resulted in a significant reduction in mortality and hospitalization during those initial 90 days, which extended up to 1 year following initiation of dialysis.



RightReturn® Program

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Re-Hospitalization After Discharge from Hospital

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Medicare Fee-For-Service (N=3 million)	
Medical Discharges	**% Cumulative Re-Hospitalizations**
0-30 days	21.1%
30-60 days	30.3%
61-90 days	36.6%
91-180 days	47.9%
181-365 days	59.4%

S. Jencks et al, NEJM 360, 1418, 2009

Predictors of Re-Hospitalization

		Relative Risk
Age	<55 yr	1.0 (ref)
	55-69 yr	0.99
	70-79	1.07
ESRD		1.42
No. of Re-Hospitalizations	0	1.0
	1	1.37
	2	1.75
	≥3	2.5

S. Jencks et al: NEJM 360, 1418, 2009

Pre- To Post-Hospitalization Outcomes

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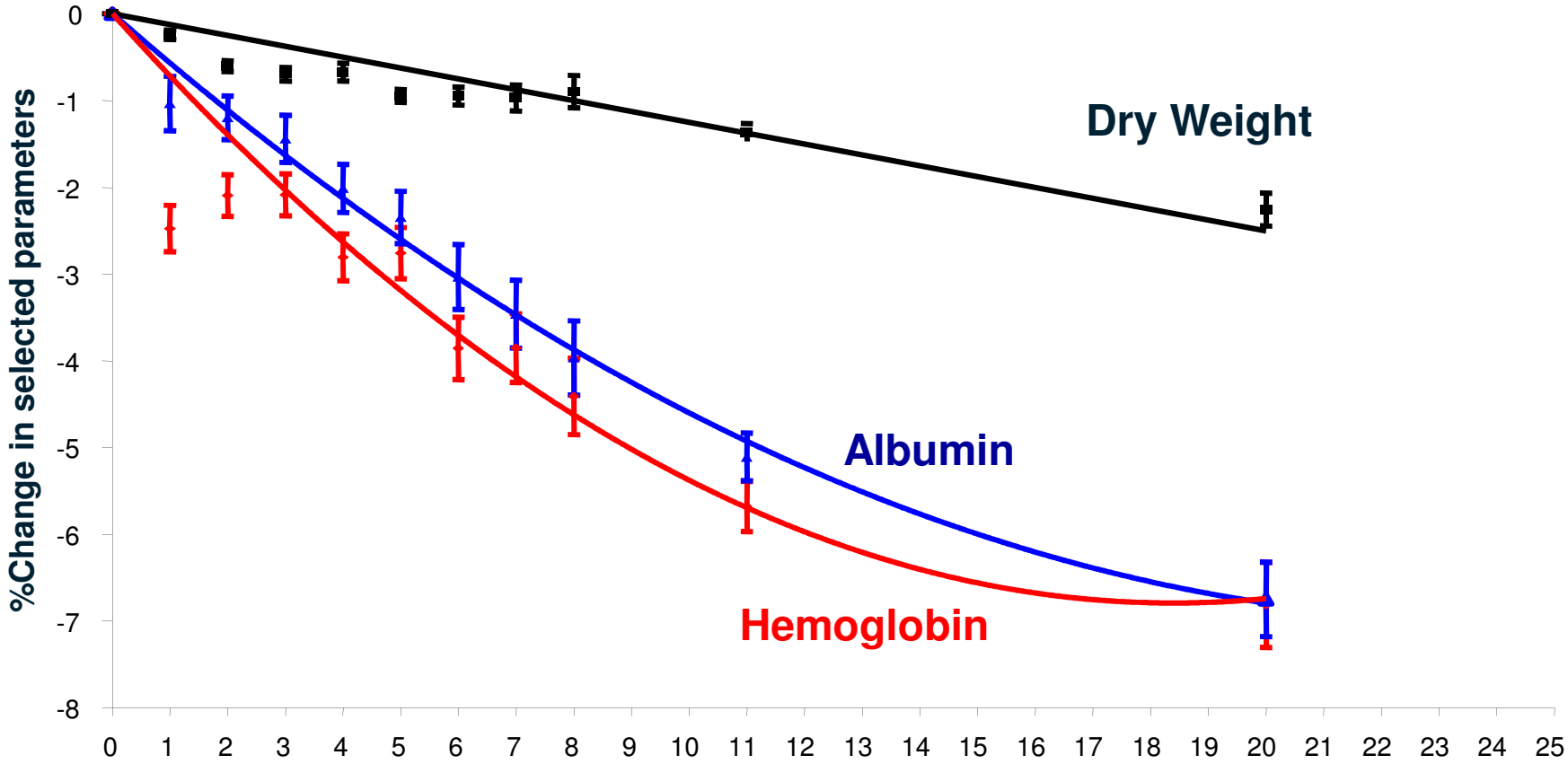
% Change in Dry Weight, Albumin, & Hgb
From Pre- to Post-Hospitalization
N=126,000 HD pts at FMCNA in 2007



Chan et al: KI (2009) 76, 331-341.

Medical Goals that are Synergistic with the “Bundle”

1. Reduce hospitalization and mortality in first 120 days
2. Optimize iron, Epogen management
3. Increase prevalence of home therapies
4. Reduce catheter rates, the main cause of BSI and Epogen “resistance”

Treatment Options Program (TOPs) Overview

- Initiated to educate patients with Stage 3 or 4 CKD prior to ESRD
- Consists of a two-hour education program provided at least every month in each FME “area”
- Patients are referred by their nephrologists or PCPs
- Non-biased presentation of available treatment modalities
  - In center
  - Home Therapy
  - Transplant
  - No therapy
- Patients are encouraged to attend with family members
- Advantages of Permanent Access are emphasized

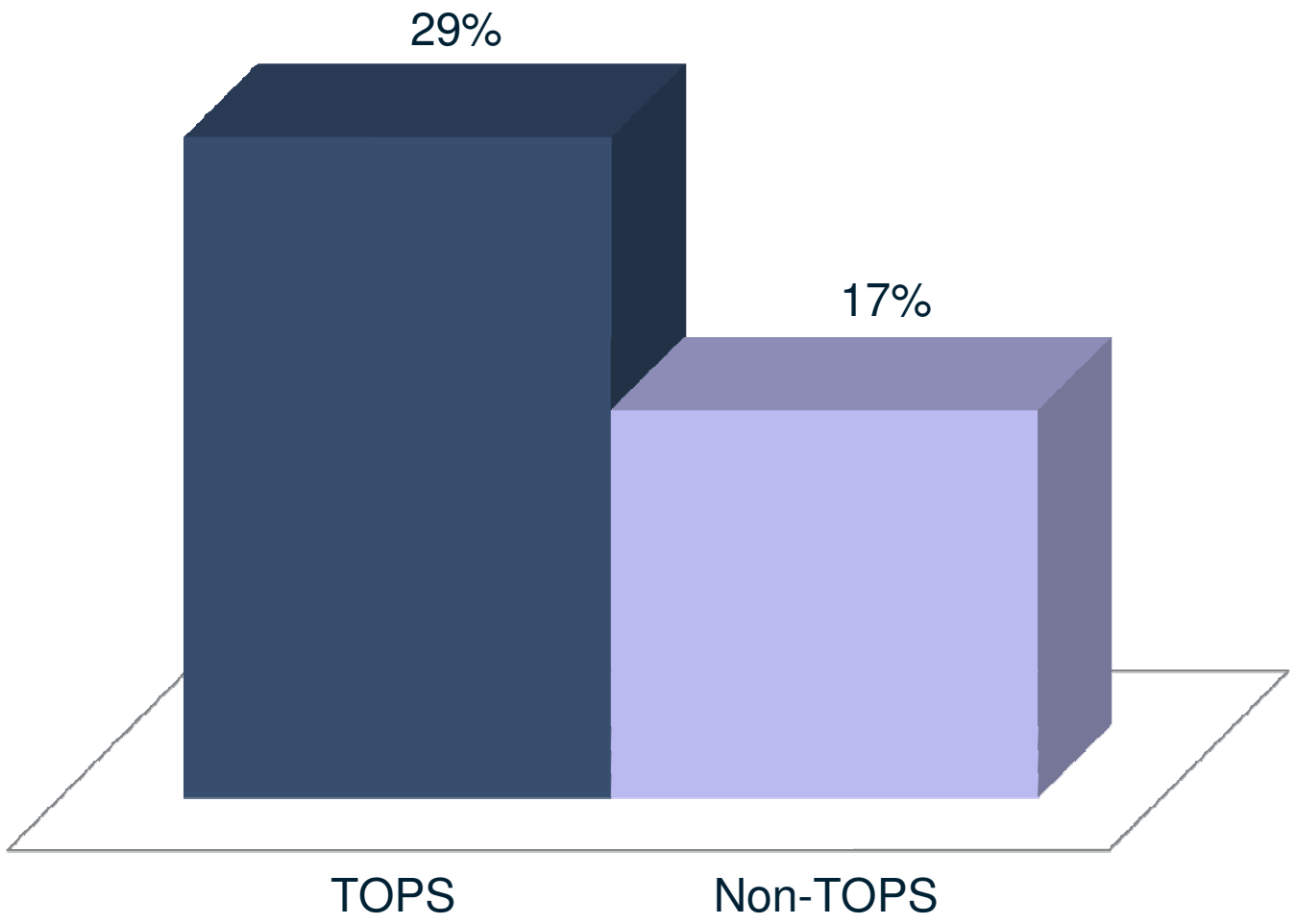
Treatment Options
September 2006 thru May 2010

- 35,521 pre-ESRD TOPS educations performed so far
- 132,930 patients admitted to FMS
  - 11,579 of this group had TOPS education
  - 121,351 starts did not have TOPS education
- Only 8.7% of total starts were TOPS educated

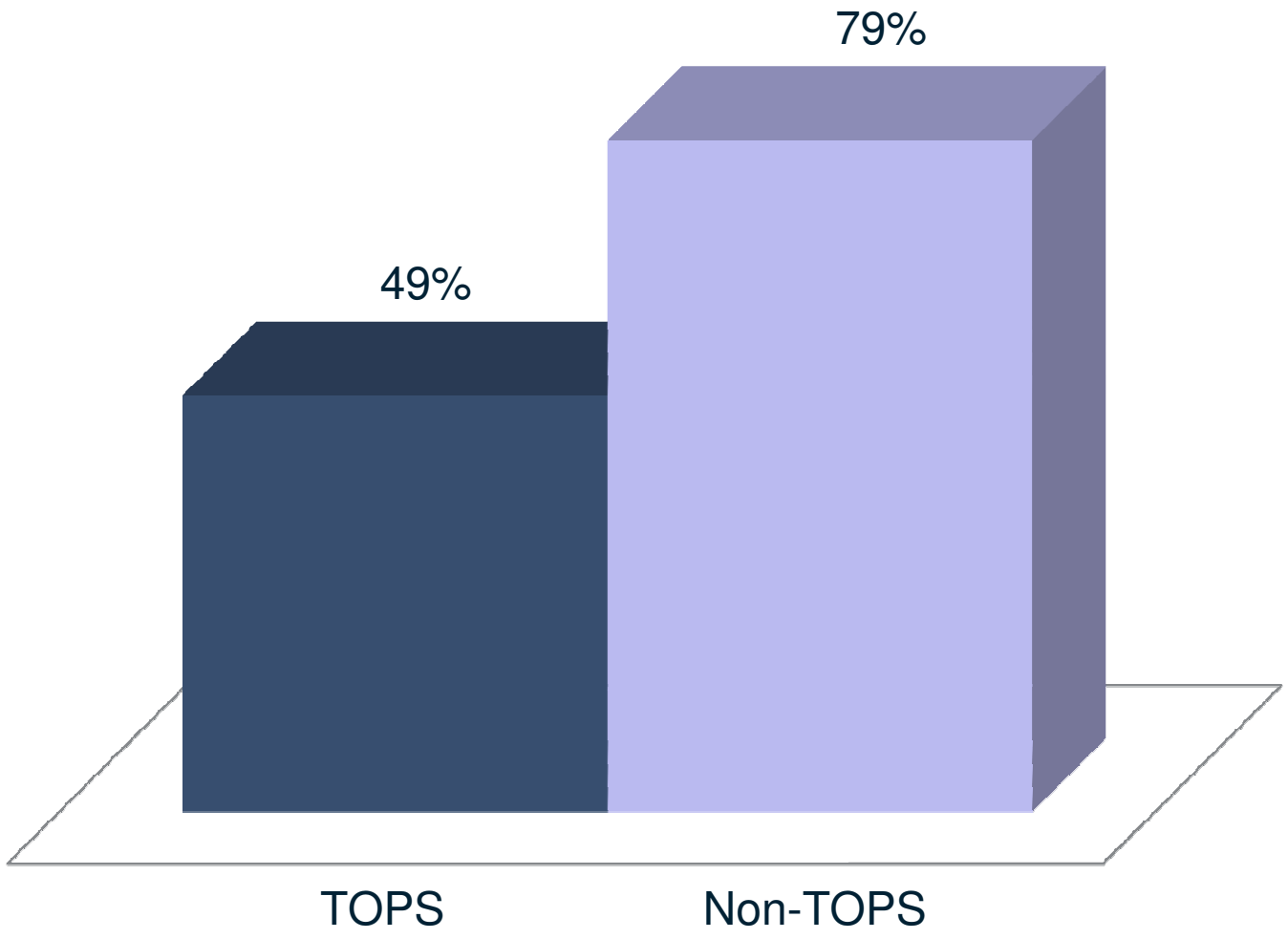
Follow up

- Goals
  - Improve home therapy awareness
  - Increased use of fistulas
  - Decrease catheter utilization
  - Early removal of catheters if necessary
- Follow up at 30, 90 and 180 days after TOPs education
  - Remind patient to go back to referring physician
  - Invite them and their families to return for another round of TOPs (prn)

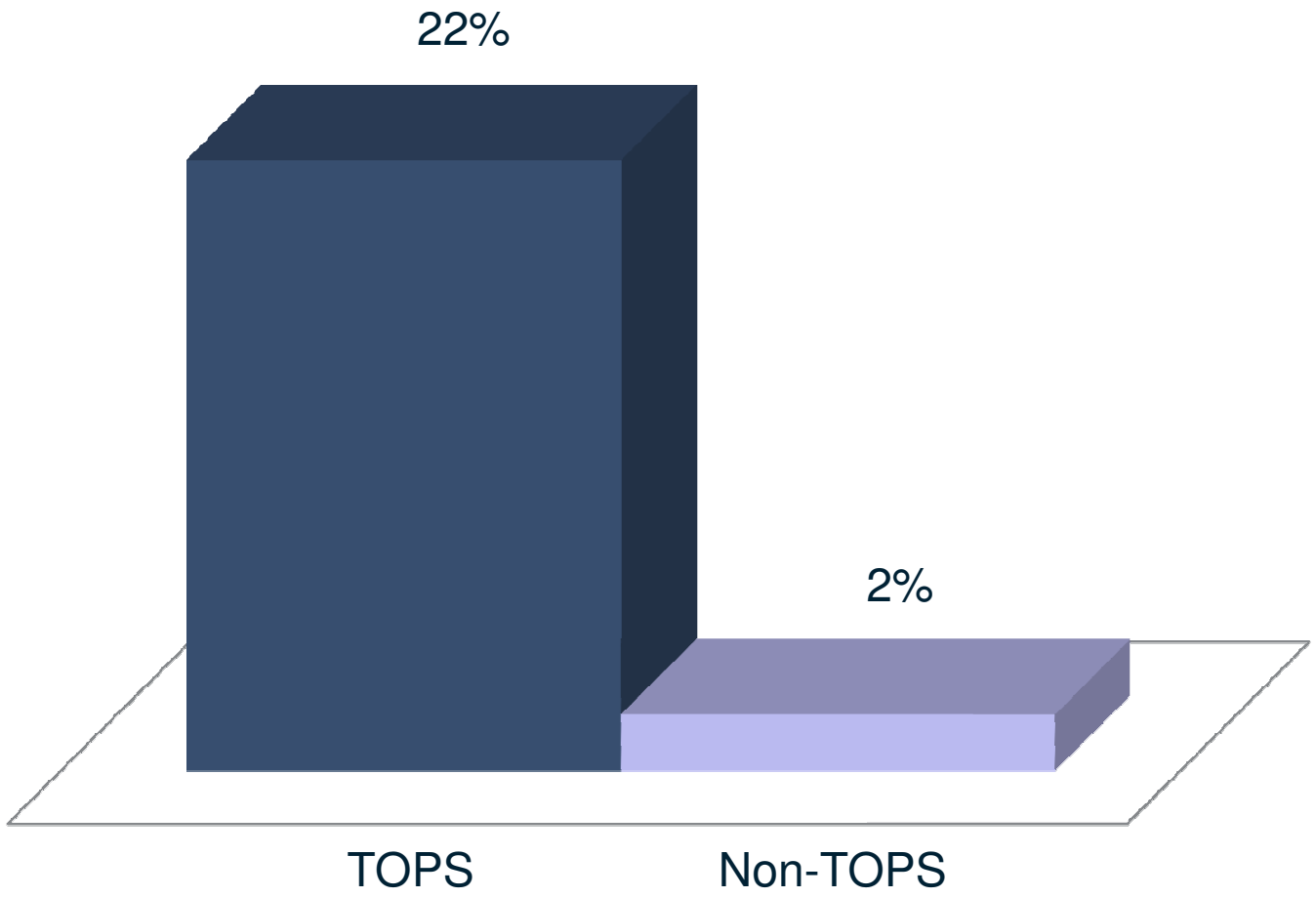
Fistula/Grafts Start (Feb-May 2010)



HD Catheter Starts (Feb-May 2010)



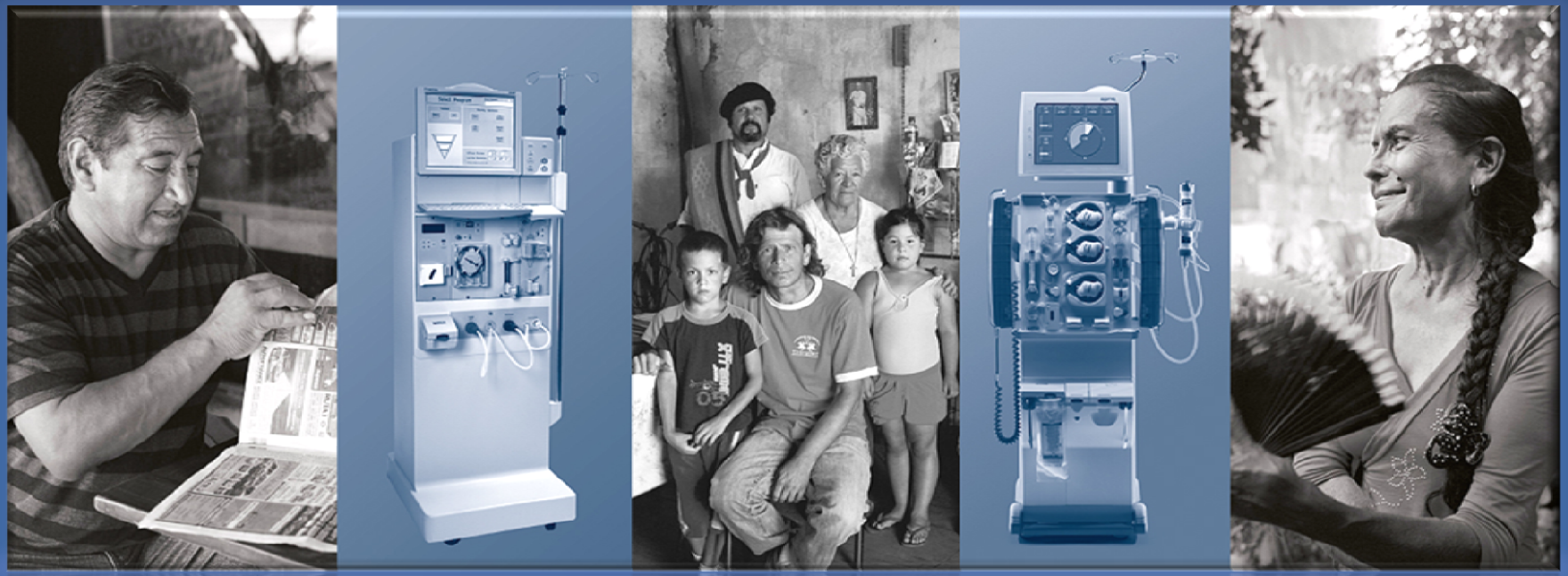
Home Therapy Starts (Feb-May 2010)



Treatment Options Program (TOPs) Outcomes

Participation in TOPS leads to:

- Increased knowledge about Home Therapies and rate of home therapy selection
- Decrease use of hemodialysis catheters
- Greater use of AVF at start of dialysis
- Improved survival rate at 90 days after initiation of dialysis



Catheter Reduction Initiative

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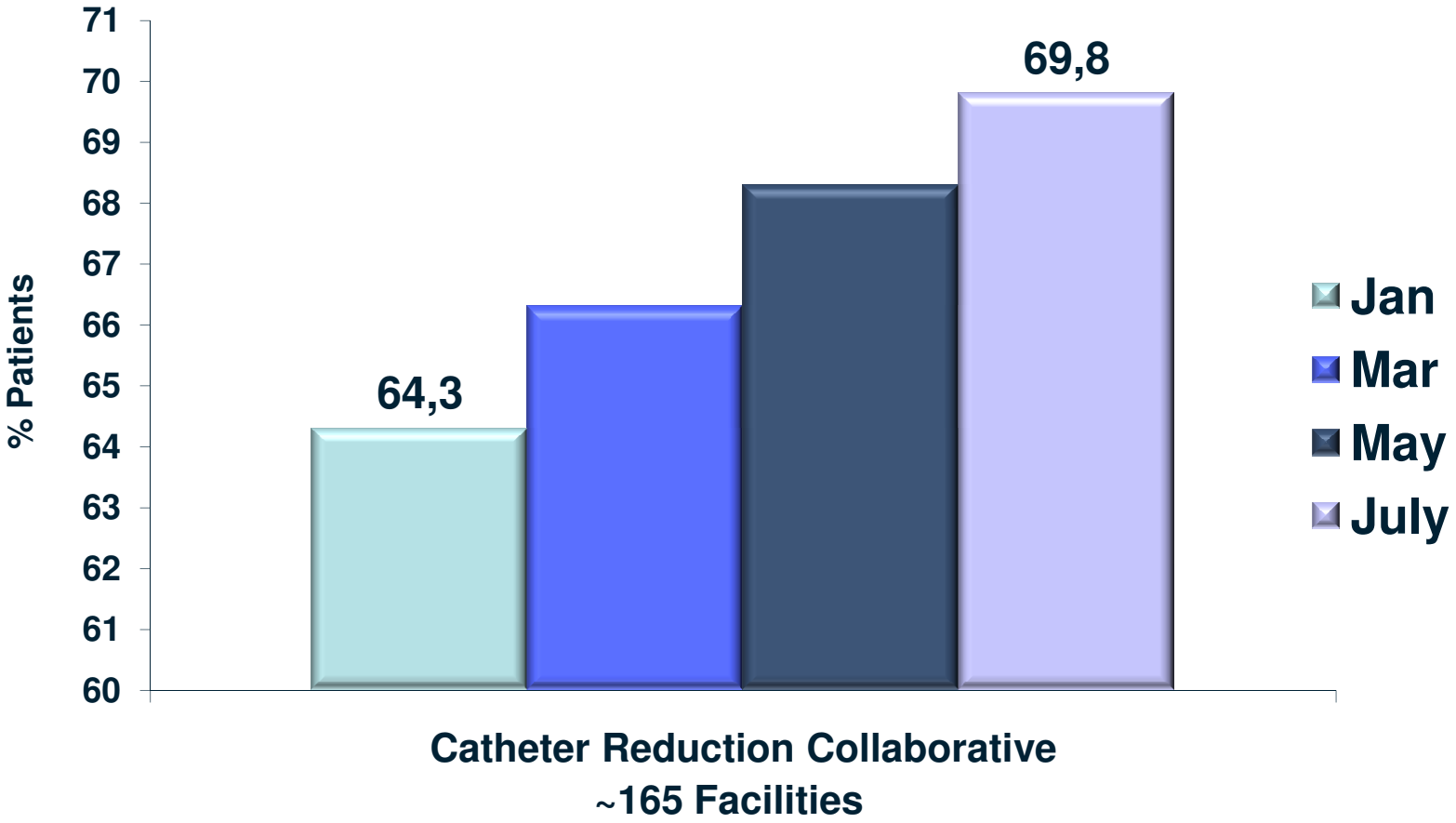
Catheter Maintenance Costs Per Patient

"Out of pocket" catheter related costs in the Bundle environment ~ $ 10,000 per patient per year



Hydration Management

- Hydration management is essential to:
  - Reduce hospitalization, ER visits, and “missed treatments.
- Increasing evidence that cardiovascular mortality (~50% of all deaths) is not “atherosclerotic” heart disease, but left ventricle failure.

Background and Medical Need

- The state of hydration depends on:
  - Salt and water intake by patient (dietary counseling)
  - Sodium “loading” during dialysis
- Sodium loading during dialysis is a major contributor to fluid overload

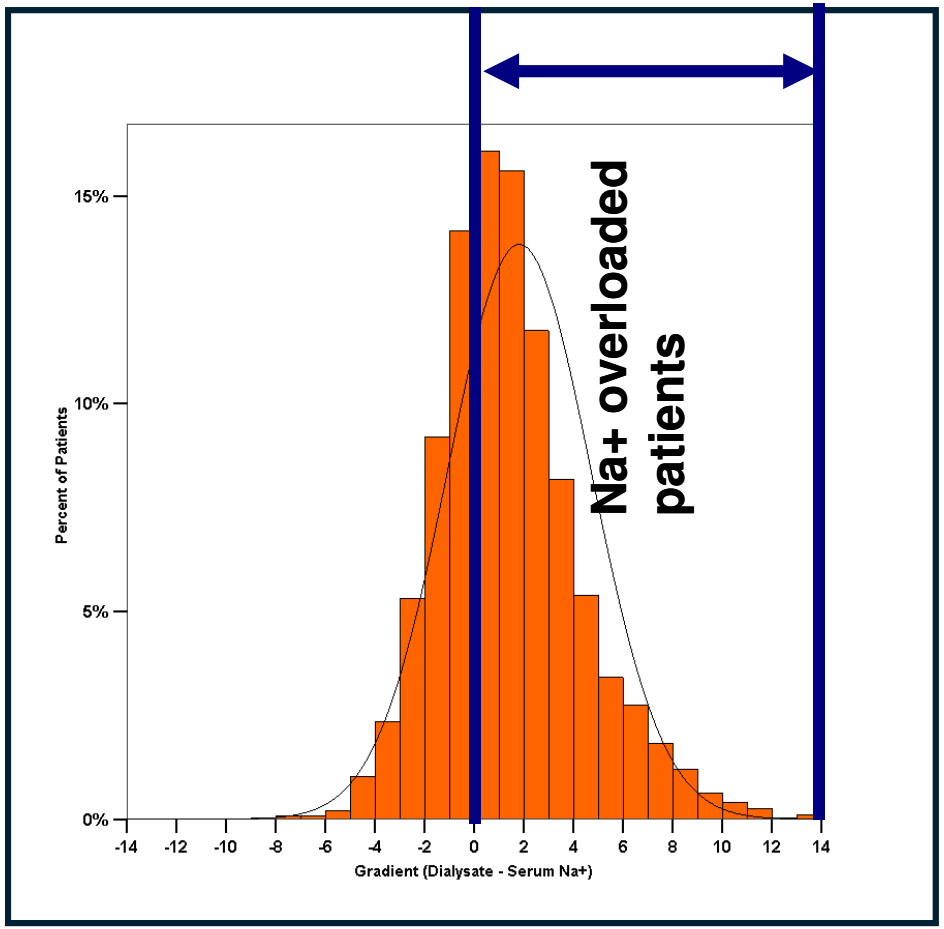
  → increased thirst

  → increased fluid intake
- Sources of sodium loading during HD:
  - influx from dialysate (dialysate sodium higher than serum sodium)
  - priming and rinsing of blood lines with saline
  - treatment of hypotensive episodes and cramps with saline infusions

Na+ Distribution – 2008 Data

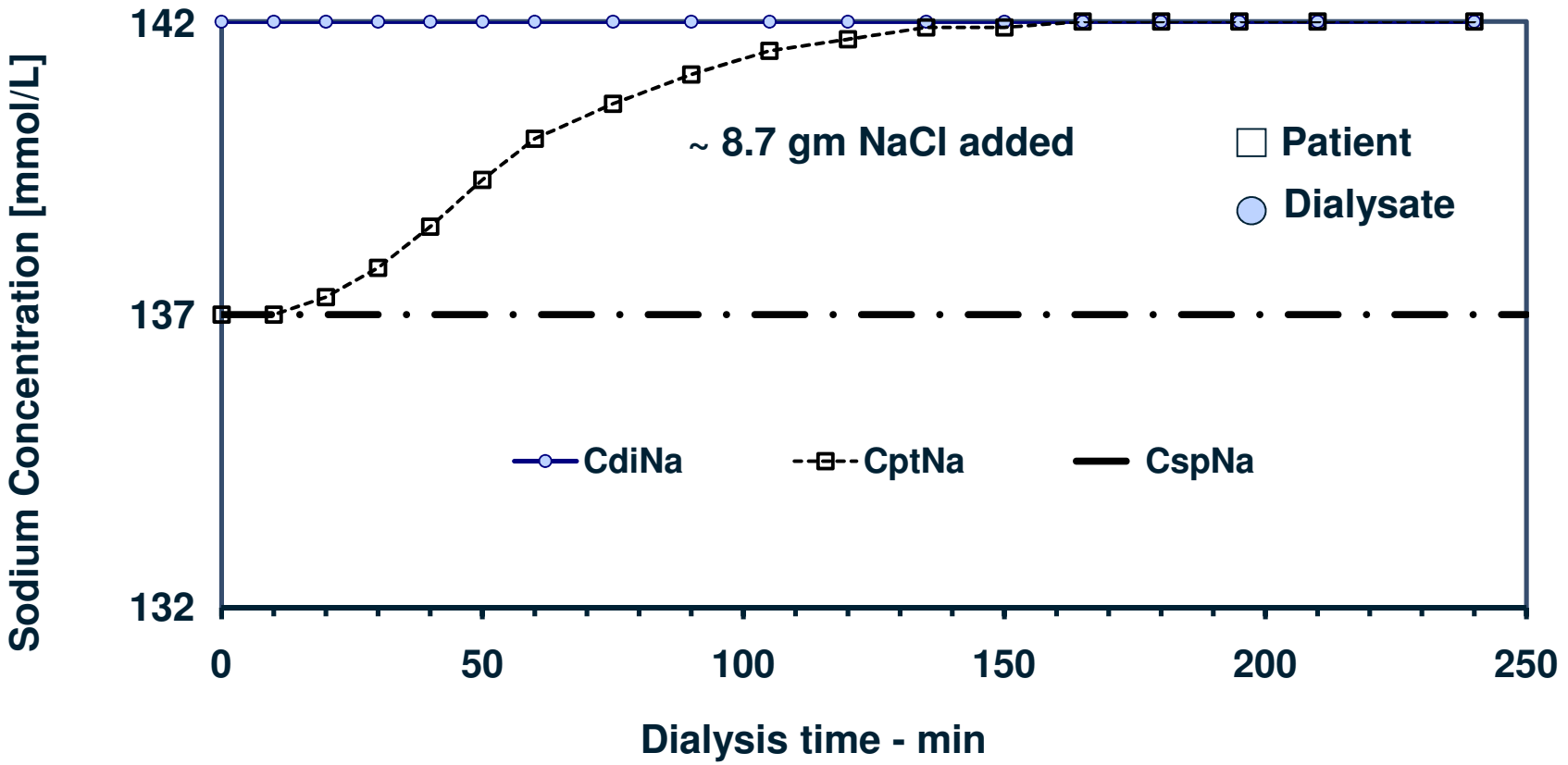
70% of patients dialyze with dialysate sodium levels in excess of their serum Na+ levels

Na+ Gradient

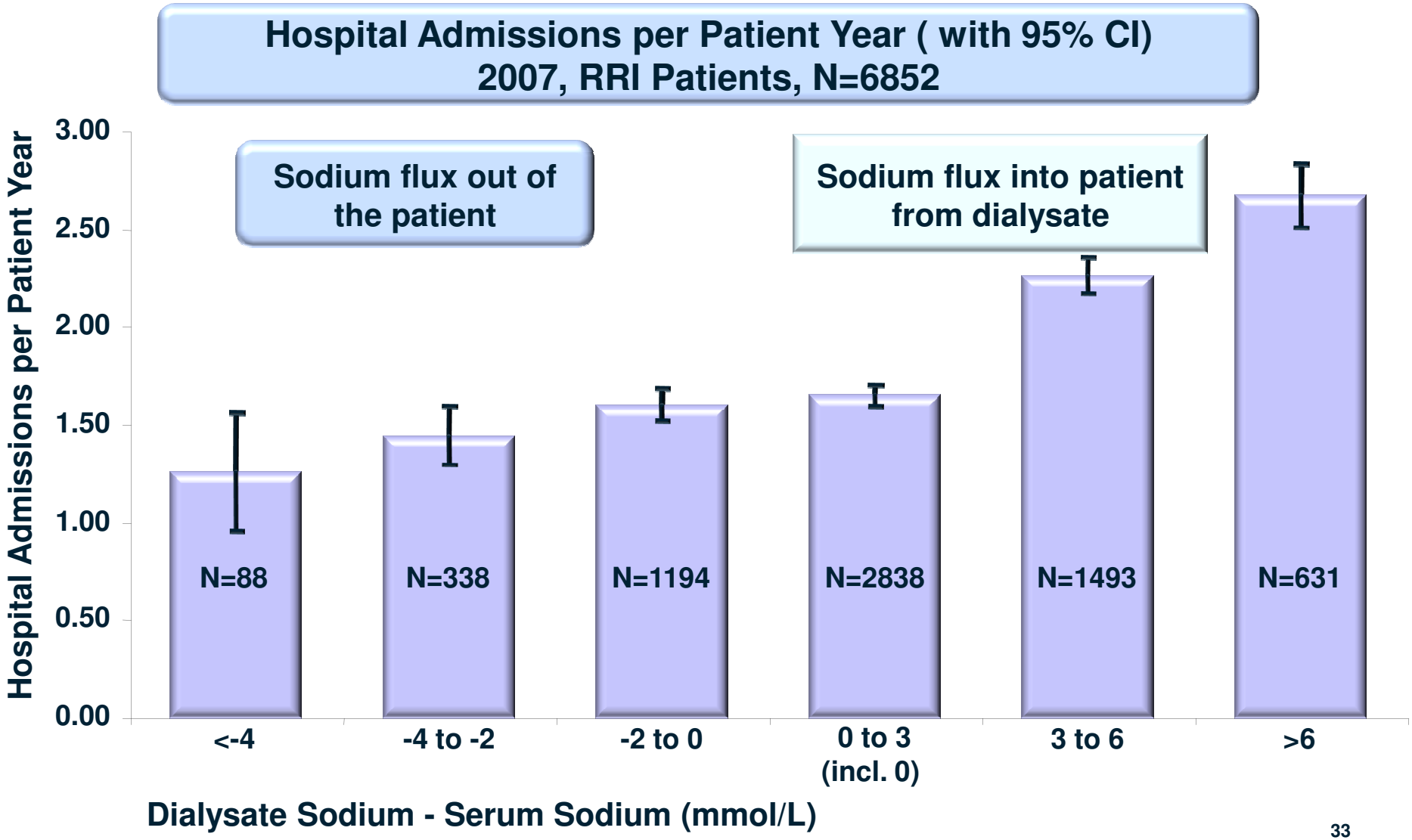


Projected Sodium Transfer from Dialysate to Serum

A constant Dialysate Na+ 5 mEq/L greater than Serum Na+ will result in very marked positive Na balance during dialysis



Hospital Admissions



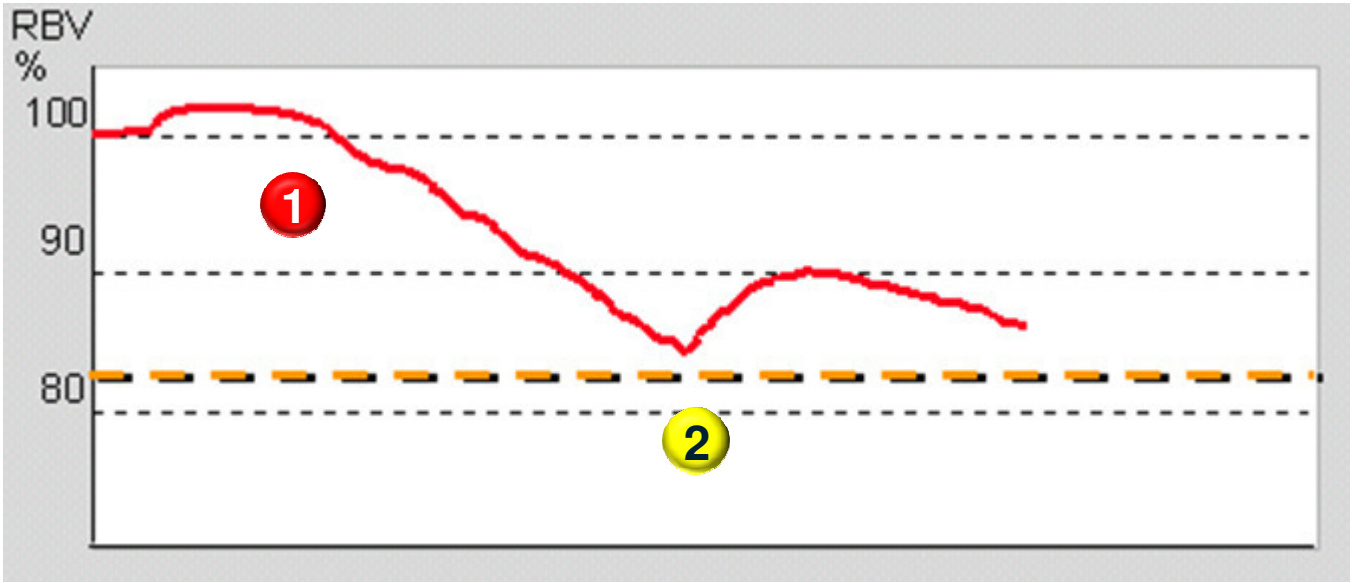
Economic Impact of Fluid Overload

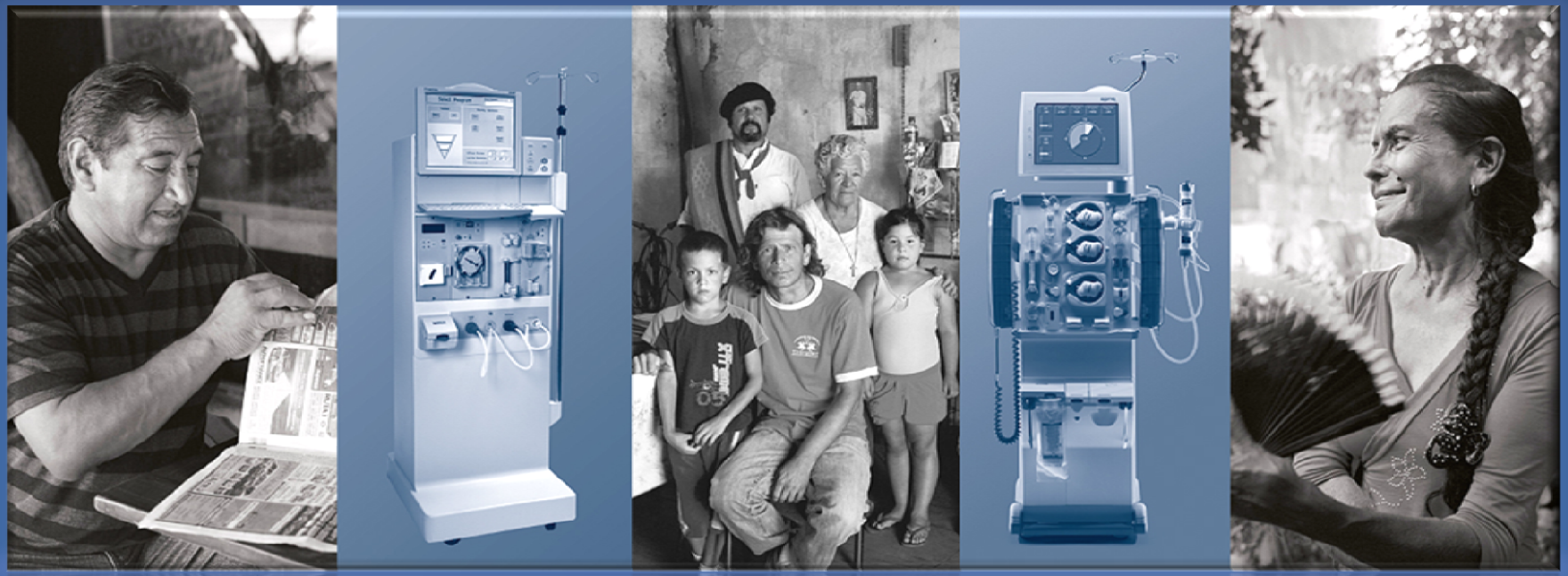
Recent publication (CJASN, 2010) corroborated these estimates

Hospitalizations (≤5 days) due to fluid overload in prevalent HD patients did cost Medicare / Medicaid a total of $266 million ($6,372 per episode) over a 2-year follow-up period in recent study

Blood Volume Monitor

- BVM tracks change of relative blood volume (RBV)
- If fluid removal exceeds plasma refilling RBV will drop 1
- A rapid drop of RBV may lead to systematic hypotension
- A biofeedback control prevents RBV to drop below individual threshold 2





Thank You!

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Solving Today's Medical Needs In Renal Replacement Therapy: Bone Mineral Metabolism

Jose A Diaz-Buxo, MD, FACP
Chief Medical and Regulatory Officer
SVP Renal Products Group

Fresenius Medical Care

Overview

- Bone and mineral metabolism (BMM) complications remain a major source of complications among patients with chronic kidney failure
- Despite significant advances in understanding the pathophysiology and treatment of these conditions achieved during the past 40 years, many problems remain to be solved
- The challenge we face in preventing and treating disorders of BMM is best appreciated by taking into account the many factors involved in its development

Chronic Kidney Disease - Factors Influencing Mineral and Bone Disorders

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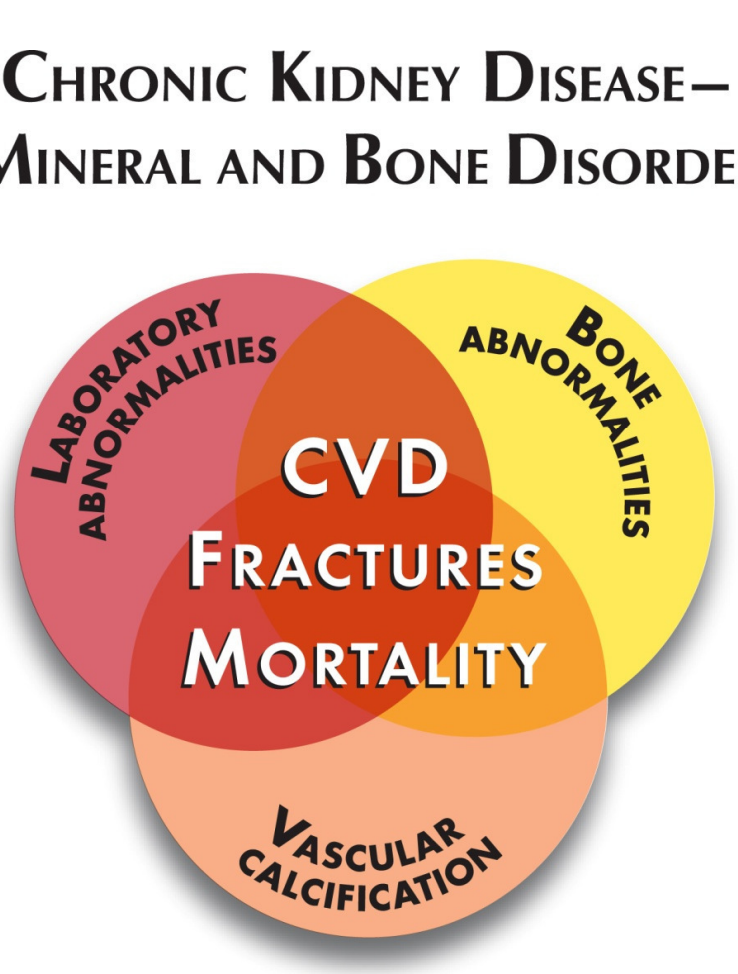
Dietary
Ca, P, Vit D

GI absorption
Ca, P, Vit D

25 OH vit D
Skin/Liver

1,25 OH vit D
Kidneys

PTH
Secretion



Renal handling
Ca, P, 1,25 Vit D

Bone reservoir
handling Ca, P

Bone factors
BMP, OPG, FGF

Drugs
supplements

Metabolic acidosis

KDOQI Targets for BMM are not Achieved in Most HD Patients[1,2]

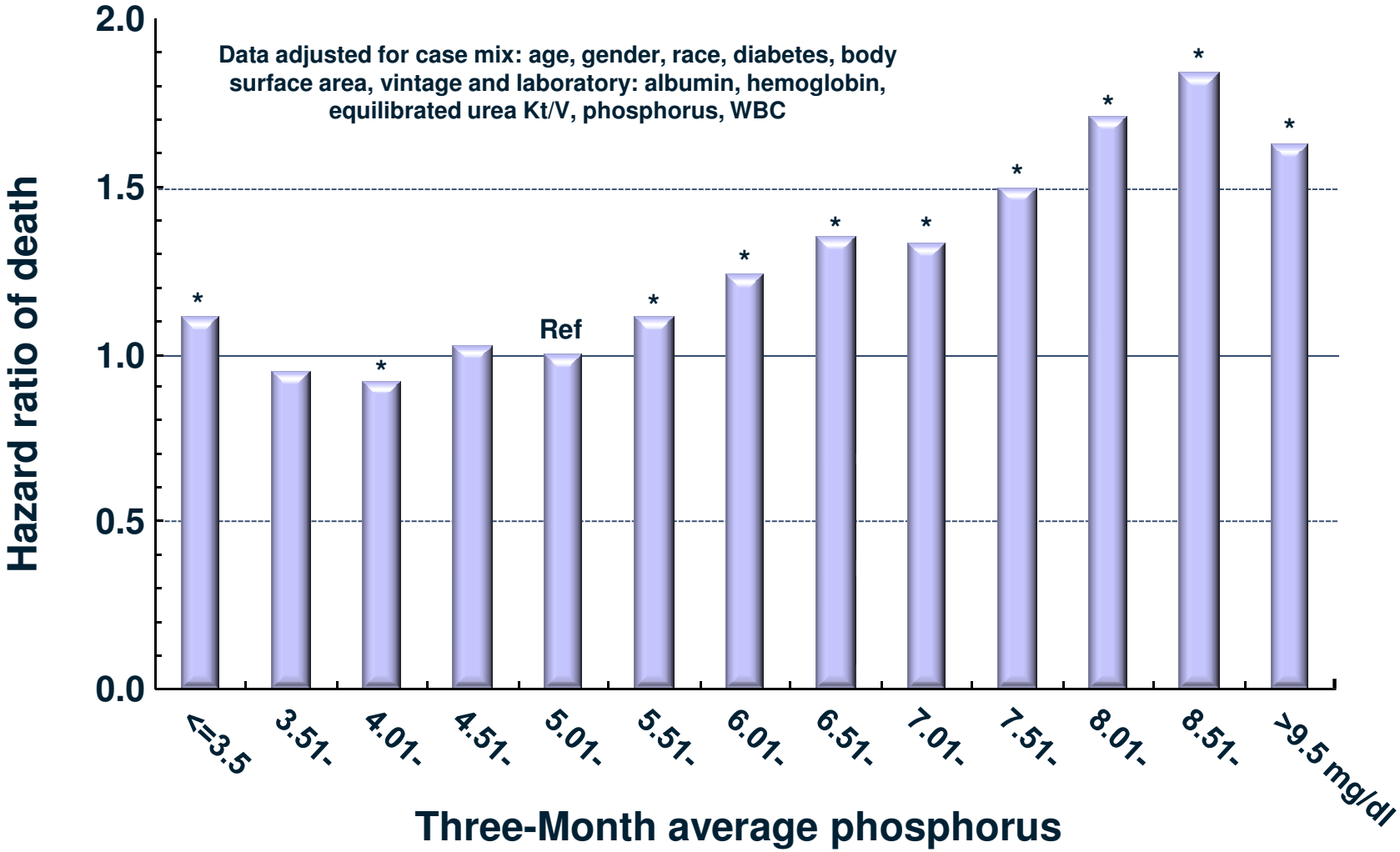
- 51-52 % of patients achieve the calcium target
- 47-49 % the phosphate
- 68-78 % the calcium-phosphate product
- 24-31% the PTH
- Only 2.4-6.9% of patients meet all 4 targets
- Clinical trials show that adjustment of dialysis prescription has great potential to achieve better control of the bone mineral metabolism. For example, dialysate calcium concentration, duration of the dialysis session and hemodiafiltration all have an impact on calcium, phosphate and PTH.

[1]Davenport A, et al. Blood Purif 30:111–117,2010 [2]Gotch F, et al. Blood Purif 29: 163-176 2010

FMC Approach to Bone and Mineral Metabolism

- Use our extensive database to identify signals, trends, drugs and clinical practice effects on BMM
- Integrate clinical practices, dialysis prescription, nutrition and drugs into our therapeutic approach
- Construct theoretical models, test concept in pilot studies and validate them (Phosphorus Kinetic Modeling - PKM)
- Support development of drugs and devices to correct BMM abnormalities

Relative Risk of Mortality versus Phosphorus



Data source: Fresenius Data Warehouse
Baseline period: Q4 2005; Follow-up period: 2006

Need for Improved Treatment Algorithm to Achieve Phosphate and Calcium Targets

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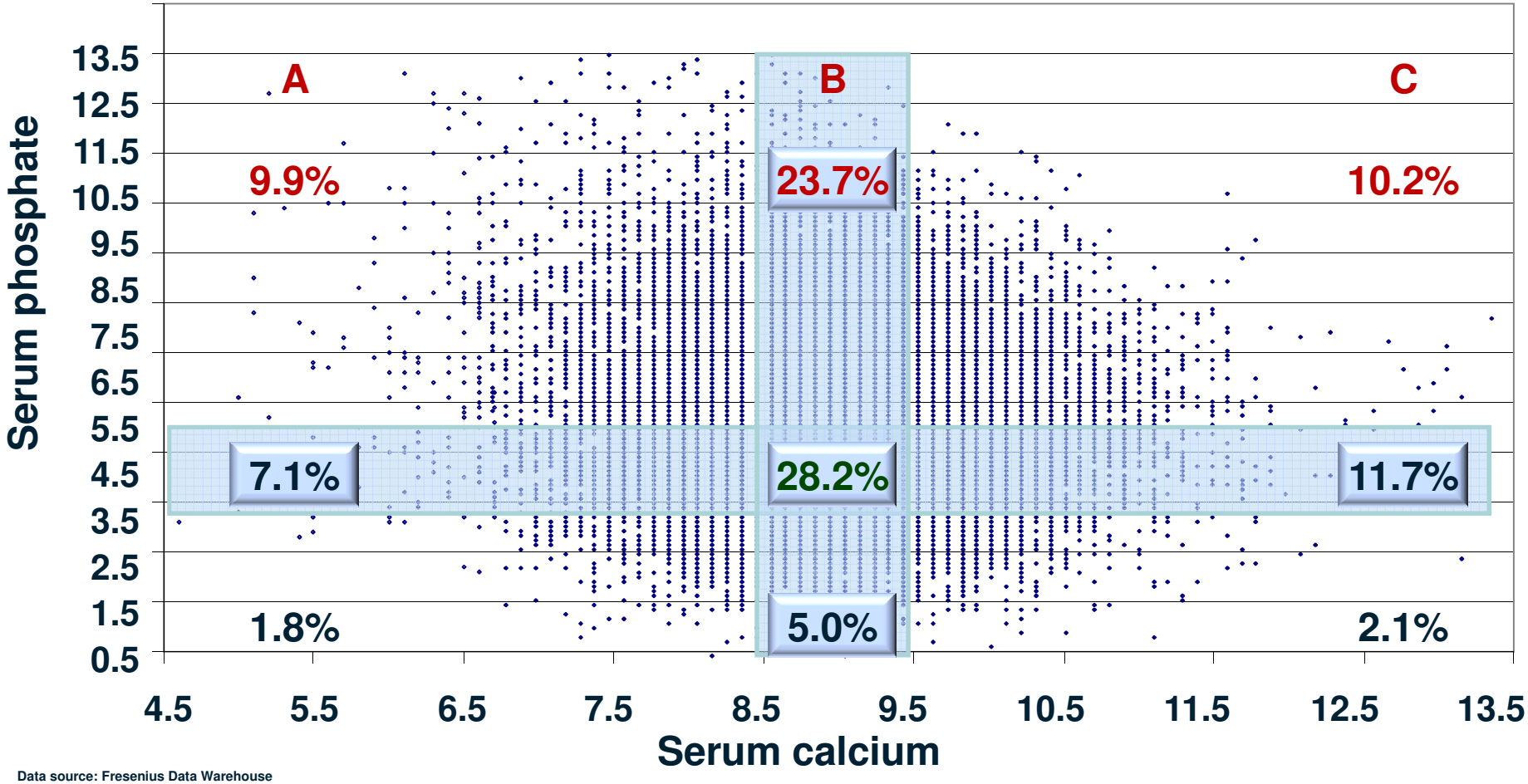
Distribution of phosphate and calcium among patients receiving PhosLo® (n=31,712)



Data source: Fresenius Data Warehouse
Latest lab results between 3/1/2007 and 5/31/2007 among patients with open order for PhosLo® at that time

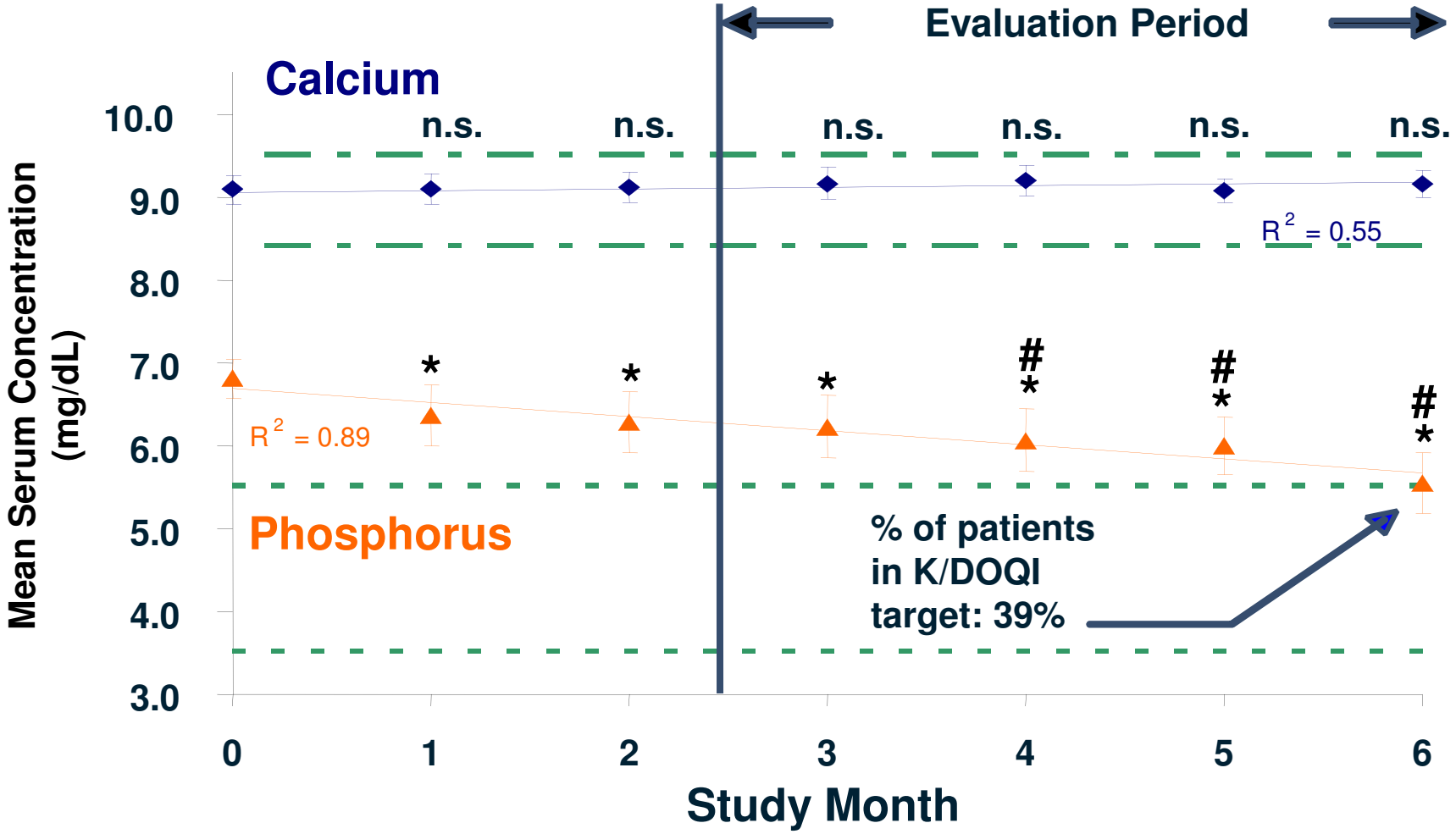
Introduction to Phosphorus Kinetic Modeling (PKM)

- Hyperphosphatemia in dialysis patients is a major cause of:
  - Morbidity (Calcification, cardiovascular disease, bone disease)
  - Mortality
- Calcium acetate effectively binds phosphorus in the gut to prevent absorption, but may increase calcium load
  - Most dialysis patients are in positive calcium balance, regardless of phosphate binder
- Patient compliance with therapy is a strong determinant of phosphate and calcium balance

The Phosphorus Kinetic Model (PKM)

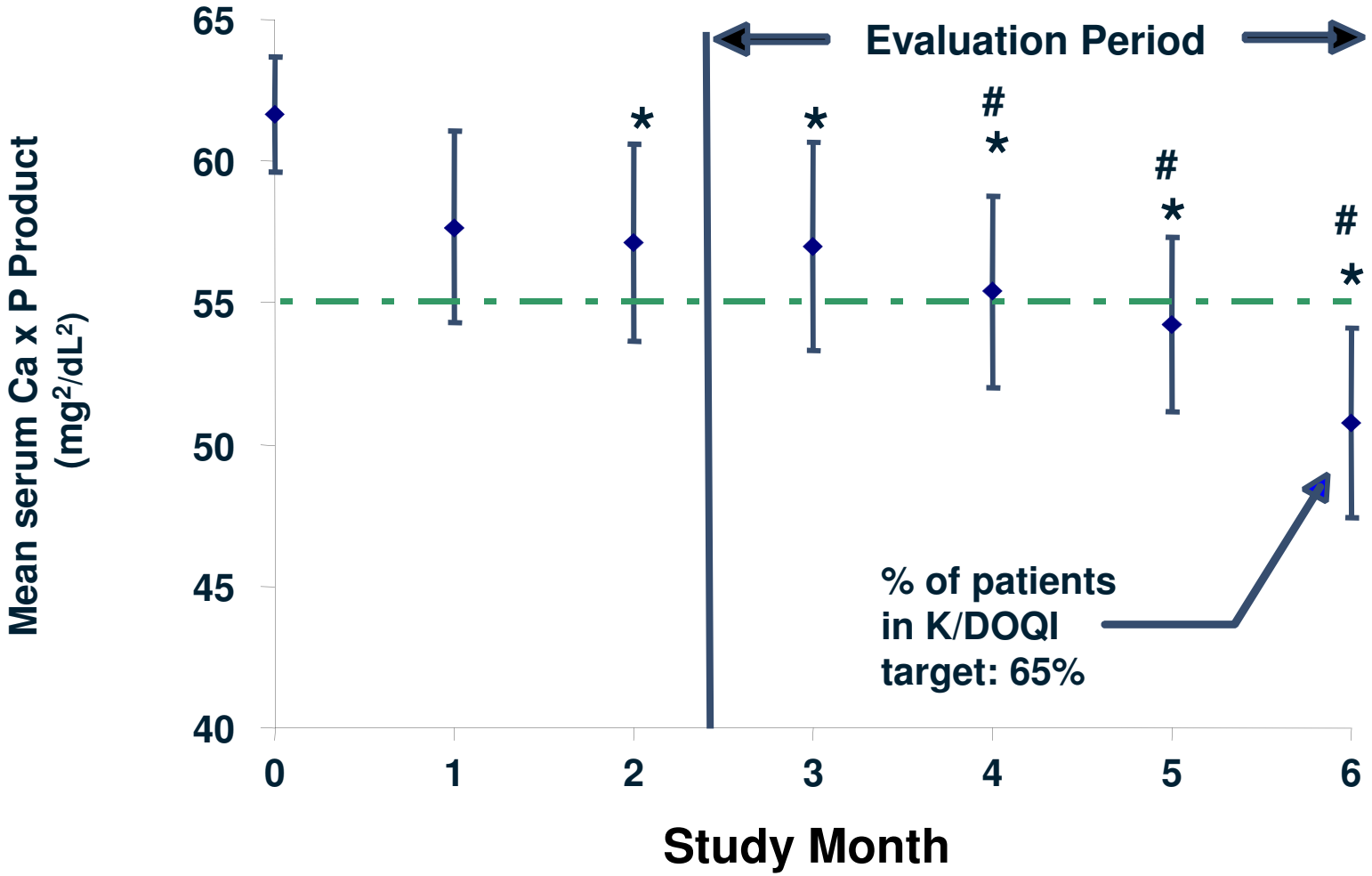
- **Definition:**
  - **A kinetic model identifying the interacting effects of vitamin D analogues, phosphate binders and dialysate Ca on P and Ca mass balance in hemodialysis**
- **Goal of PKM model:**
  - **To help control a hemodialysis patient's serum P level through the use of Calcium Acetate and achieve K/DOQI guidelines for P and Ca without the need for additional blood draws and lab tests**
  - **Optimize phosphate binder therapy and patient compliance**
  - **Match Ca removal during dialysis to Ca accumulation between dialyses to prevent Ca overload or depletion**
- **Seamless integration between central lab (Spectra), clinic and PKM report**
- **FMC has completed a pilot study and is conducting a second clinical trial to validate the model**

Serum Phosphorus and Calcium



Error bars represent 95% confidence interval, * p < 0.05, compared to month 0
# p < 0.01, compared to month 0

Calcium Phosphorus Product

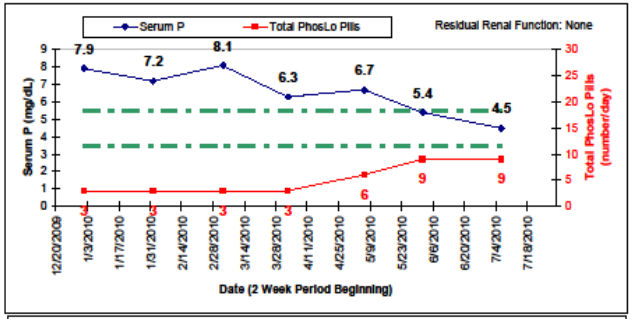


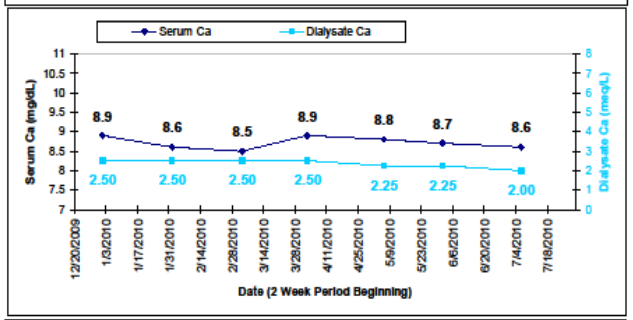
Error bars represent 95% confidence interval, * p < 0.05, compared to month 0
# p < 0.01, compared to month 0

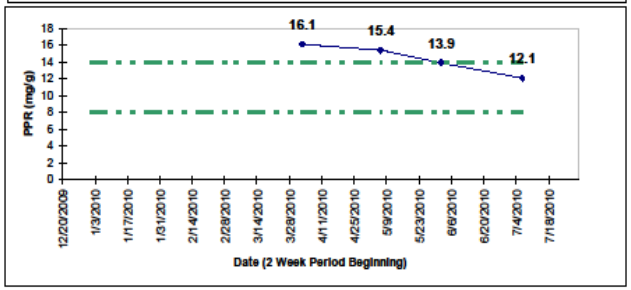
Physician Report

Facility ID: 1234 **Monthly Patient PKM Report** Run Date: 7/2010

Patient Name	KC Patient ID	Proton ID	First PKM Month
JOE FICTIONAL	111111	100100	April 2010







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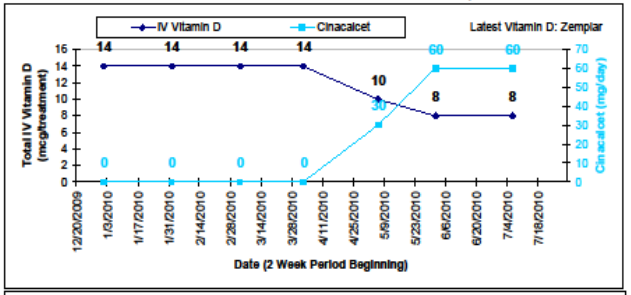
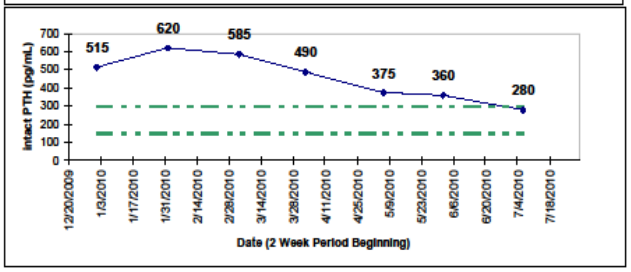




	Current Prescription/ Lab Values on PKM Date	PKM Model Recommendations
Serum phosphorus:	4.5 mg/dL	
Serum phosphorus (post):	1.8 mg/dL	
PhosLo prescription:	9 pills per day	**Maintain pills per day**
Serum calcium:	8.6 mg/dL	
Serum calcium (post):	8.2 mg/dL	
Dialysate calcium prescription	2.0 meq/L	**2.0 meq/L**
IV Vitamin D prescription:	8 mcg/treatment	**8 mcg/treatment**
Cinacalcet prescription:	60 mg/day	**60 mg/day**
Phosphorus Protein Ratio:	12.1 mg/g	**within recommended range**
PPR Recommended Range:	8 - 14 mg/g	

☐ I agree with the recommendations in this report and would like any changes in prescription implemented.

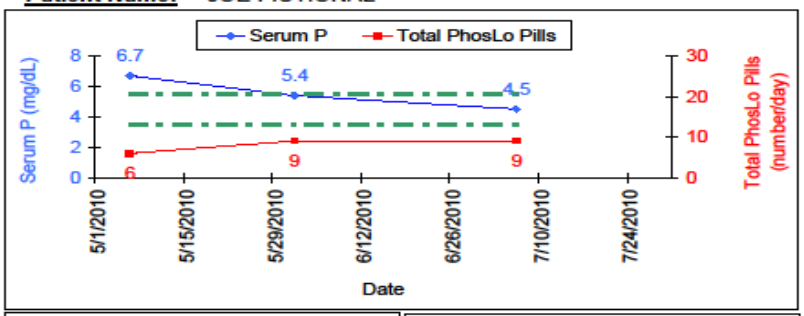
☐ I have noted above those changes to be made or no changes in prescription should be made at this time.

Physician Signature _____ Date _____

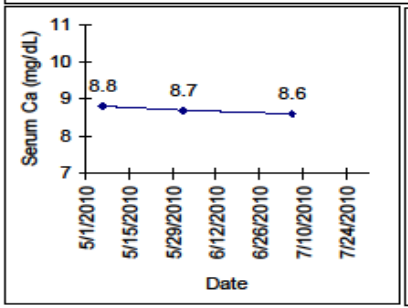
Patient Report

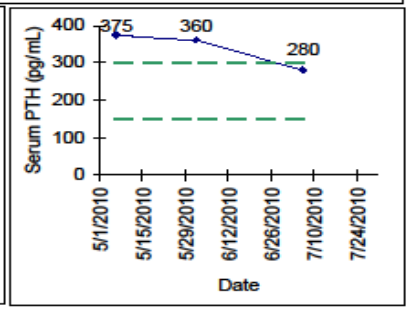
PKM Patient Report for July 2010

Patient Name: JOE FICTIONAL



Phosphorus Status





PTH Status

Protein Intake
65 g each day

Comment about protein intake. E.g., Adequate protein intake; or Concentrate on better protein intake

Phosphorus Intake
787 mg each day

Comment about P intake. E.g., Adequate phosphorus intake; or Watch out for high phosphorus foods

Protein Phosphorus Ratio
12.1 mg P per g protein

Comment about PPR. E.g., Within recommended range; or Concentrate on compliance with PhosLo

New PhosLo Prescription
Total: 9 pills each day

Breakfast: _____
Lunch: _____
Dinner: _____
Snacks: _____

New Sensipar Prescription
60 mg each day

Time of day: _____

PKM 2 Study Rationale

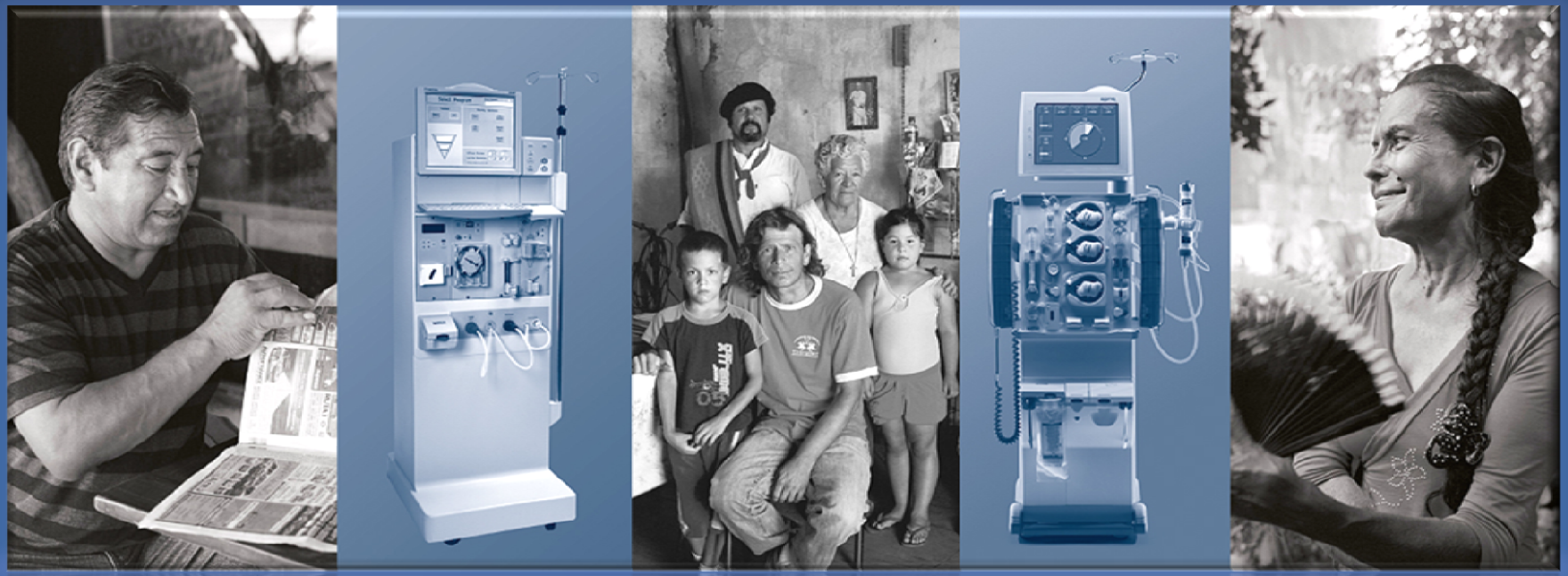
- Validation of positive results from the pilot study
  - The primary endpoint is the change in serum phosphorus between a baseline period and the latest value of the intervention period.
- Addressing the changing clinical/ business paradigm
  - PKM algorithm is patient-centric
  - Revised PKM algorithm helps manage multi-faceted BMM therapy
    - Efficient and effective calcium acetate binder therapy
    - Dialysate calcium concentration
    - Efficient Vitamin D use
    - Optimal use of Cinacalcet
- PKM 2 support quality of care metrics/ initiatives (Bundle)

PKM Clinical Application

- **Prescribe patient-specific parameters:**
  - **Recommended dietary phosphorus intake**
  - **Vitamin D dose**
  - **Dialysate**
  - **Phosphate binder dose**
  - **Cinecalcet dose**
- **Assess patient compliance**
- **PKM will assist nephrologists in adjusting both phosphate binder dose, dialysis prescription and patient compliance to achieve desired phosphate and calcium values in support of BMM**

PKM Conclusions

- Useful tool for helping chronically hyperphosphatemic patients meet phosphorus target without increasing serum calcium.
- PKM report provides valuable bone and mineral metabolism information to physicians and patients that can be used as formal prescription
- PKM provides cost effective optimization of BMM therapy



Thank You!

Fresenius Medical Care

Dry Weight and Bone Mineral Metabolism Management in EMEALA

Wolfgang Wehmeyer
Senior Vice President International Marketing & Medicine

Fresenius Medical Care

Fresenius Medical Care Experience

OnlineHDF and Body Composition Monitor (BCM) and Bone Mineral Metabolism Management (BMM) are as important as eating and drinking.

BCM

Fresenius Medical Care

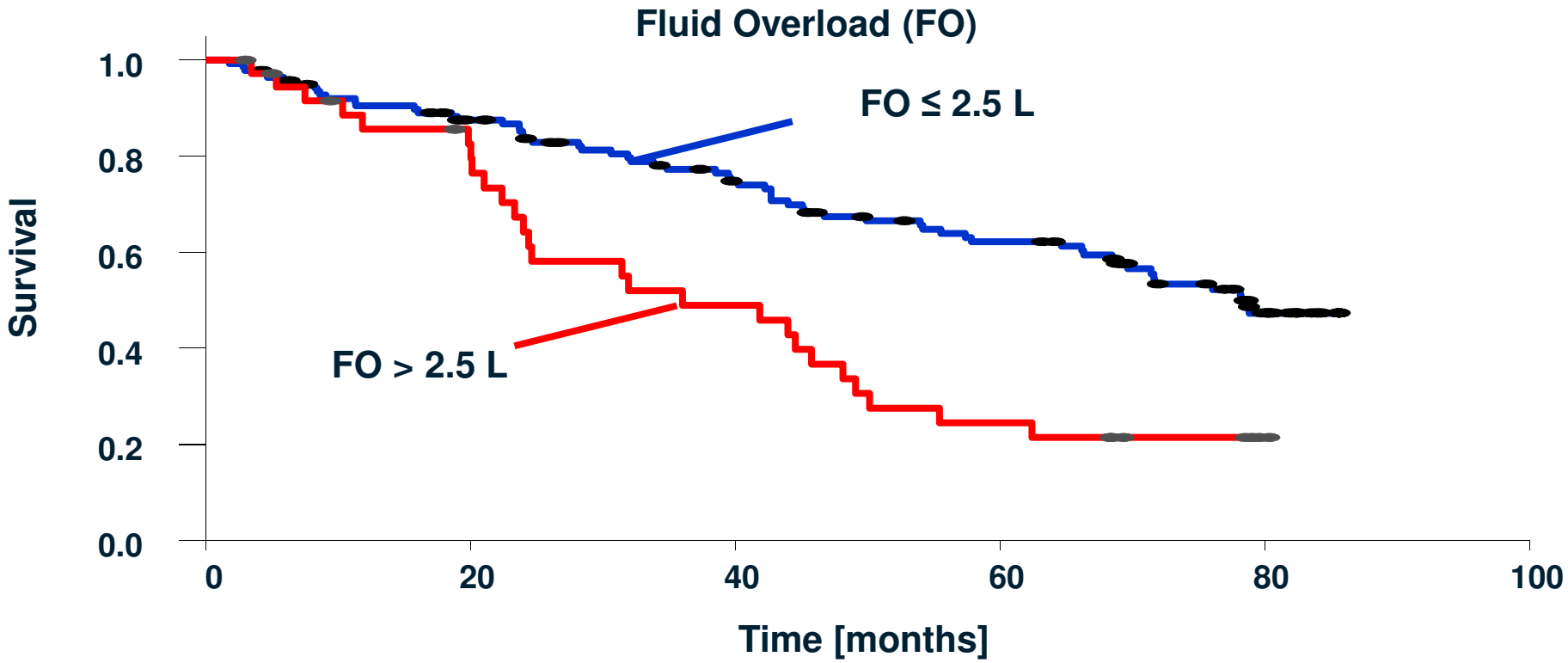
An Affordable and User Friendly Product with Impressive Impact

Fluid Overload is as Serious as Diabetes

Fluid Overload is as Serious as Diabetes

Fresenius Medical Care

Kaplan Meyer comparison



The mortality risk of overhydration in haemodialysis patients.
Wizemann V, Wabel P, Chamney P, Zaluska W, Moissl U, Rode C, Malecka-Masalska T, Marcelli D.
Nephrol Dial Transplant. 2009 May;24(5):1574-9.

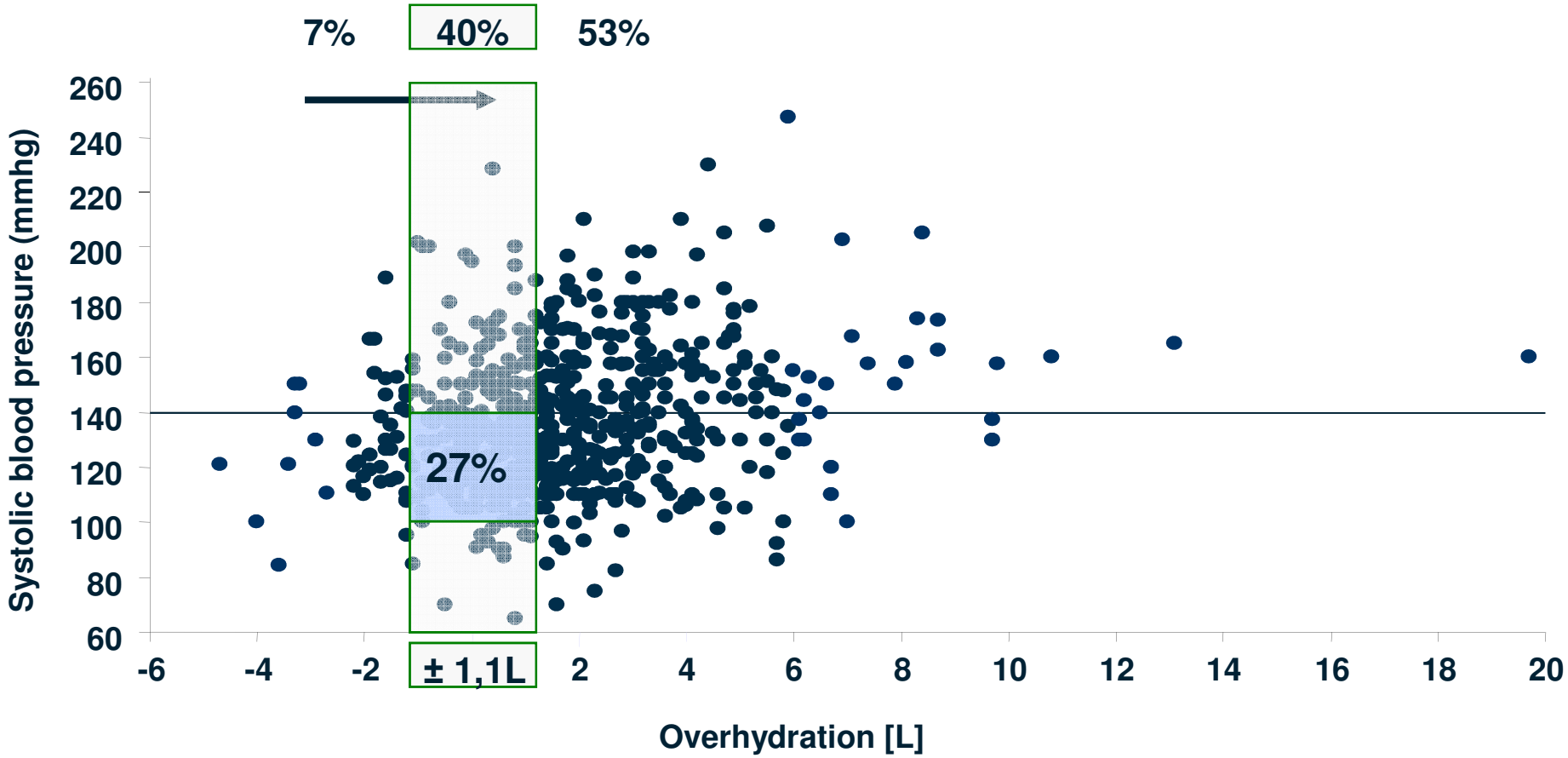
BCM

An Affordable and User Friendly Product with Impressive Impact

Fluid Overload is as Serious as Diabetes

50 - 60% of All PD Patients are “Out of Range” (30-40% in HD)

50-60% of All PD Patients are "Out of Range"



Assessment of Fluid Status and Nutritional Status in European Peritoneal Dialysis Patients.
Objective Measurement through Body Composition Monitoring
1 Van Biesen W, 2Covic A, 3Fan S, 4Claes K, 5Lichodziejewska-Niemierko M, 6Verger C,
7Steiger J, 8Wabel P, 8Gauly A, 8Schoder V, 8Himmele R

BCM

An Affordable and User Friendly Product with Impressive Impact

Fluid Overload is as Serious as Diabetes

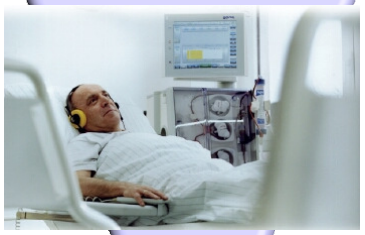
50 - 60% of All PD Patients are “Out of Range” (30-40% in HD)

We Can Do Something About It

We Can Do Something About It

Prescription Intervention Pays Off

Underhydrated | Normal Range | Overhydrated



- Less interdialytic symptoms
- No side effects

- better blood pressure
- less anthypertensive drugs
- No side effects

Guided optimization of fluid status in haemodialysis patients.
Machek P, Jirka T, Moissl U, Chamney P, Wabel P.
Nephrol Dial Transplant. 2010 Feb;25(2):538-44.

BCM
Outstanding Clinical Documentation

Fresenius Medical Care

More than 50 publications in the past 3 years

BCM in pre-ESRD patients:

Essig M, Escoubet B, de Zuttere D et al. Cardiovascular remodelling and extracellular fluid excess in early stages of chronic kidney disease. Nephrol Dial Transplant 2008; 23: 239-248

→ EDTA 2010: Bioimpedance Utility in the Evaluation of Hydration Status in non-dialysis CKD patients; Simona Stancu,1,2 Ligia Petrescu,1,2 Adrian Zugravu,1,2 Gabriel Mircescu.1,2; Date: Sunday, June 27, 2010

BCM in PD:

Devolder I, Verleysen A, Vijt D, Vanholder R, Van Biesen W. Body composition, hydration, and related parameters in hemodialysis versus peritoneal dialysis patients. *Perit.Dial Int* 2010; 30: 208-214

→ EDTA 2010: MULTIFREQUENCY BIOIMPEDANCE ASSESSMENT OF HYDRATION STATUS IN PERITONEAL DIALYSIS AND FACTORS ASSOCIATED WITH FLUID OVERLOAD; F. Ferrer,1 M.J. Carvalho,1 L. Oliveira,1 O. Santos,1 A. Rodrigues,1 A. Cabrita.1 Sunday, June 27, 2010 - 12:00 AM; Session Info: Oral Session: Peritoneal dialysis

BCM in HD:

Machek P, Jirka T, Moissl U, Chamney P, Wabel P. Guided optimization of fluid status in haemodialysis patients. Nephrol Dial Transplant 2010; 25: 538-544

Wizemann V, Rode C, Wabel P. Whole-body spectroscopy (BCM) in the assessment of normovolemia in hemodialysis patients. *Contrib Nephrol*, 161: 115–118, 2008

→ EDTA 2010: DETERMINATION OF DIALYSIS DOSE: A CLINICAL COMPARISON OF METHODS; Peter Ahrenholz,1 Petr Taborsky,2 Margot Bohling,3 Peter Rawer,4 Noureddin Ibrahim,5 Martin Gajdos,6 Petr Machek,7 Michaela Sagova,8 Hans Gruber,9 Pavel Moucka,10 Ivan Rychlik,11 Gerd Leimenstoll,12 Pavel Vyskocil,13 Gunter Toenne,14 Jindriska Possnickerova,15 Joerg Woggan,16 Werner Riegel,17 Helmut Schneider,18 Ralf Wojke.19, Date: Sunday, June 27, 2010 - 12:00 AM

→ EDTA 2010: PREVALENCE OF FLUID OVERLOAD IN EUROPEAN HD PATIENTS; Peter Wabel,1 Tomas Jirka,2 Volker Wizemann,3 Wojciech Zaluska,4 Pedro Ponce,5 Ulrich Moissl,1 Sebastian Wieskotten,1 Paul Chamney,1 MEDOS Study Group Saturday June 26, 2010 - 12:00 AM

BCM and outcome:

Wizemann V, Wabel P, Chamney P, Zaluska W, Moissl U, Rode C, Malecka-Masalska T, Marcelli D: The mortality risk of overhydration in haemodialysis patients. *Nephrol Dial Transplant* 24: 1574–1579, 2009

BCM: hypertension and fluid management

Wabel P, Moissl U, Chamney P, Jirka T, Machek P, Ponce P, Taborsky P, Tetta C, Velasco N, Vlasak J, Zaluska W, Wizemann V: Towards improved cardiovascular management: The necessity of combining blood pressure and fluid overload. *Nephrol Dial Transplant* 23: 2965–2971, 2008

→EDTA 2010: HYPERTENSION MANAGEMENT-THE NECESSITY TO STRATIFY PATIENTS BY FLUID STATUS; Peter Wabel,1 Petr Machek,2 Paul Chamney,1 Ulrich Moissl,1 Tomas Jirka.2 Date: Saturday, June 26, 2010 - 12:00 AM

BCM and nutrition:

Wieskotten S, Heinke S, Wabel P *et al.* Bioimpedance-based identification of malnutrition using fuzzy logic. *Physiol Meas*, 29:639–654, 2008

EDTA 2008: Wizemann V, Rode C, Chamney PW *et al.* Fluid overload and malnutrition assessed with bioimpedance spectroscopy (BIS) are strong predictors of mortality in hemodialysis patients. *Nephrol Dial Transplant Plus*; 1(Suppl 2): ii16–ii17, 2008

BCM: patented body composition model

Chamney PW, Wabel P, Moissl UM *et al.* A whole-body model to distinguish excess fluid from the hydration of major body tissues. *AmJ Clin Nutr*, 85: 80–89, 2007

BCM validation against gold standard

Wabel P, Chamney P, Moissl U, Jirka T: Importance of Whole-Body Bioimpedance Spectroscopy for the Management of Fluid Balance, *Blood Purif*, 27:75–80, 2009

Passauer J, Miller H, Schleser*A et al.* Evaluation of clinical dryweight assessment in haemodialysis patients by bioimpedance-spectroscopy, *J Am Soc Nephrol*; 18: 256A, 2009

Lindley E, Chamney P, Wuepper A, Ingles H, Tattersall J and Will E: A comparison of methods for determining urea distribution volume for routine use in on-line monitoring of haemodialysis adequacy, Nephrol Dial Transplant 24: 211–216, 2009

Moissl UM, Wabel P, Chamney PW *et al.* Body fluid volume determination via body composition spectroscopy in health and disease, *Physiol Meas*, 27: 921–933, 2006

→ EDTA 2010: ASSESSING BODY COMPOSITION IN HEMODIALYSIS PATIENTS WITH A MULTIFREQUENCY BIO-IMPEDANCE DEVICE: A MULTICENTRIC EVALUATION OF REPRODUCIBILITY;Wim Van Biesen,1 J.C. Stolear,2 Y. Philips,3 S. Treille,4 R. Vanholder.1, Sunday, June 27, 2010 - 12:00 AM

EDTA 2008: Moissl U,Wabel P, Chamney PW *et al.* Validation of a bioimpedance spectroscopy method for the assessment of fat free mass. *NDT Plus,* 1(Suppl 2): ii215, 2008

ASN 2007 : Moissl U, Bosaeus I, Lemmey A *et al.* Validation of a 3C model for determination of body fat mass. *J Am Soc Nephrol.* 18: 257A, 2007

EDTA 2007: Wabel P, Rode C, Moissl U *et al.* Accuracy of bioimpedance spectroscopy (BIS) to detect fluid status changes in hemodialysis patients (abstract). *Nephrol Dial Transplant*, 22(Suppl 6):VI 129, 2007

ASN 2007 : Wabel P, Chamney PW, Moissl U *et al.* Reproducibility of bioimpedance spectroscopy (BIS) for the assessment of body composition and dry weight. *J Am Soc Nephrol*, 18: 255A, 2007

Achieving Benefits for Patients Requires a Change in Clinical Procedures

- Guiding Rules for NephroCare Centers
- Prescription Strategy of PD Solutions
- Scientific Marketing

Bone Mineral Metabolism

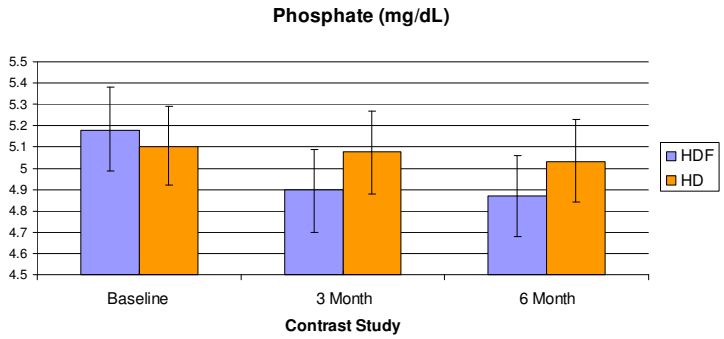
FME Online HDF and Osvaren®

A Superior Treatment Proposition

Fresenius Medical Care

Fresenius Medical Care HDF / Online HDF

Improved Phosphate Control over HF Dialysis



Penne et al. 2010 (CONTRAST study)

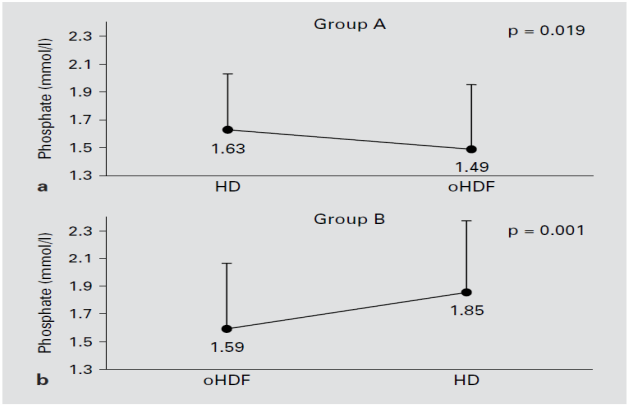
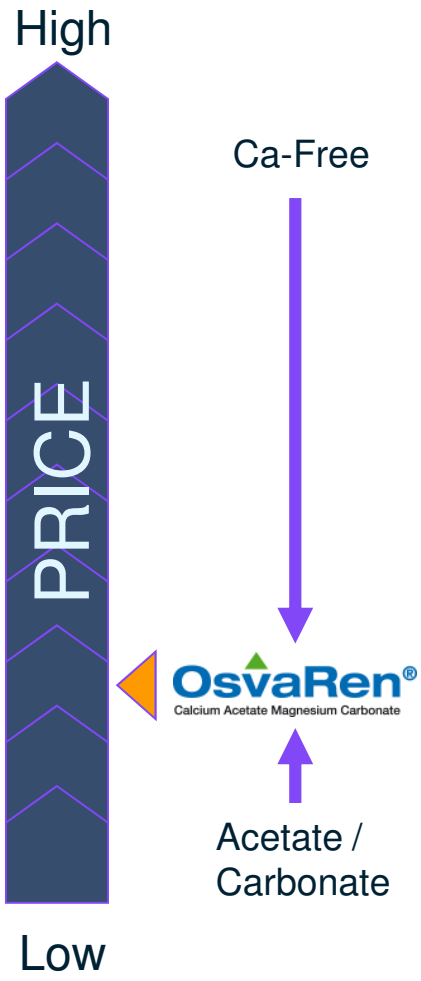


Fig. 3. Serum phosphate levels (**a** in group A, **b** in group B): mean ± SD.

Vaslaki et al. 2006

- Decreased pre-dialysis phosphate levels after 6 months of treatment with online HDF
- Phosphate treatment targets were satisfied more often, whereas the use of phosphate-binding agents was reduced.
- Increased phosphate removal using HDF potentially may improve clinical outcomes
- Convective solute transport in oHDF improved the elimination of phosphate
- A constant lowering of serum phosphate levels was possible, which has been not described before to our knowledge

OsvaRen®



- **A new combination drug for Hyper-phosphatemia**

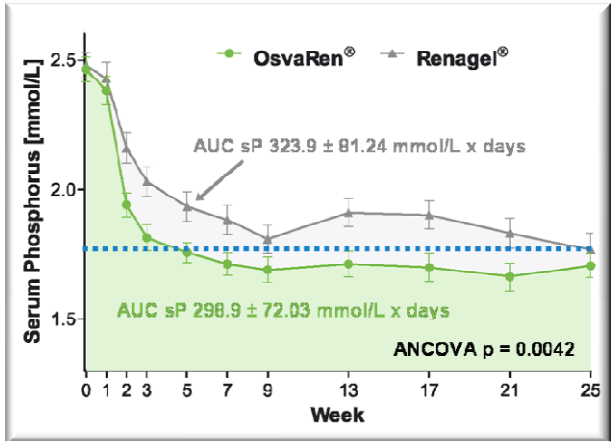
OsvaRen®
Calcium Acetate Magnesium Carbonate

- **Strong data from prospective, randomized trial (CALMAG)**
  - **Effective Phosphate control, faster to target than Sevelamer**
  - **Full Calcium Control through reduction of Ca++ component**
- **Addition of anti-calcification potential through benefit of Mg++**
- **Premium Priced over Calcium based binders**
- **Economically attractive through excellent value compared to Ca-free binders**

Convincing Data

Fresenius Medical Care

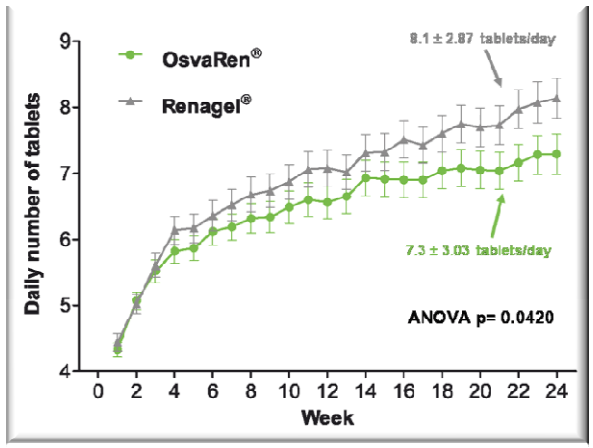
Serum Phosphorous



Time course of serum phosphorus: Fast decline with Osvaren

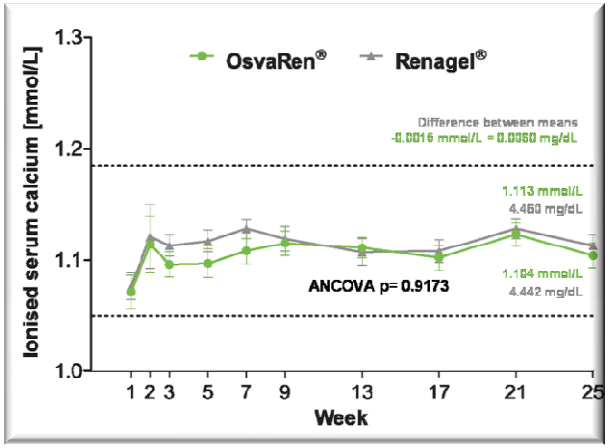
Area under the curve (AUC, [=total exposure]) for serum phosphorus significantly lower with Osvaren

Pills per patient per day



Study medication intake/day significantly lower at week 25 with Osvaren

Ionized Serum Calcium



No significant difference in ionised serum calcium between groups

calmag STUDY

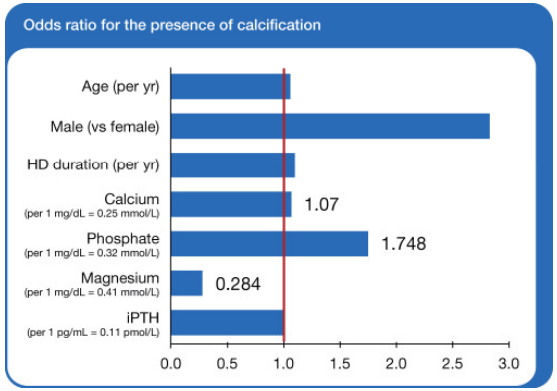
OsvaRen®
Calcium Acetate Magnesium Carbonate

Sufficient Serum Magnesium: Benefits

Fresenius Medical Care

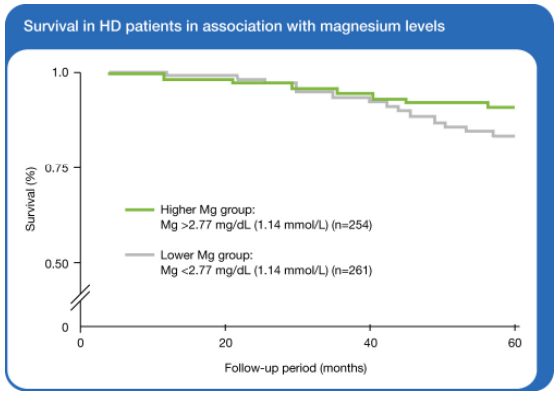
Serum Magnesium Is A Significant Predictor For Survival In Dialysis Patients

Ishimura 2007



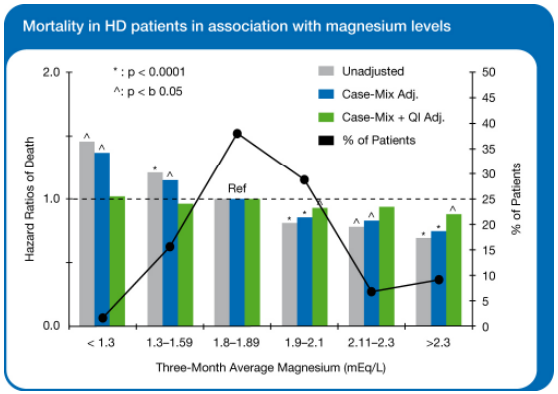
Lower serum magnesium levels are an independent factor of vascular calcification in patients with CKD

Ishimura 2007



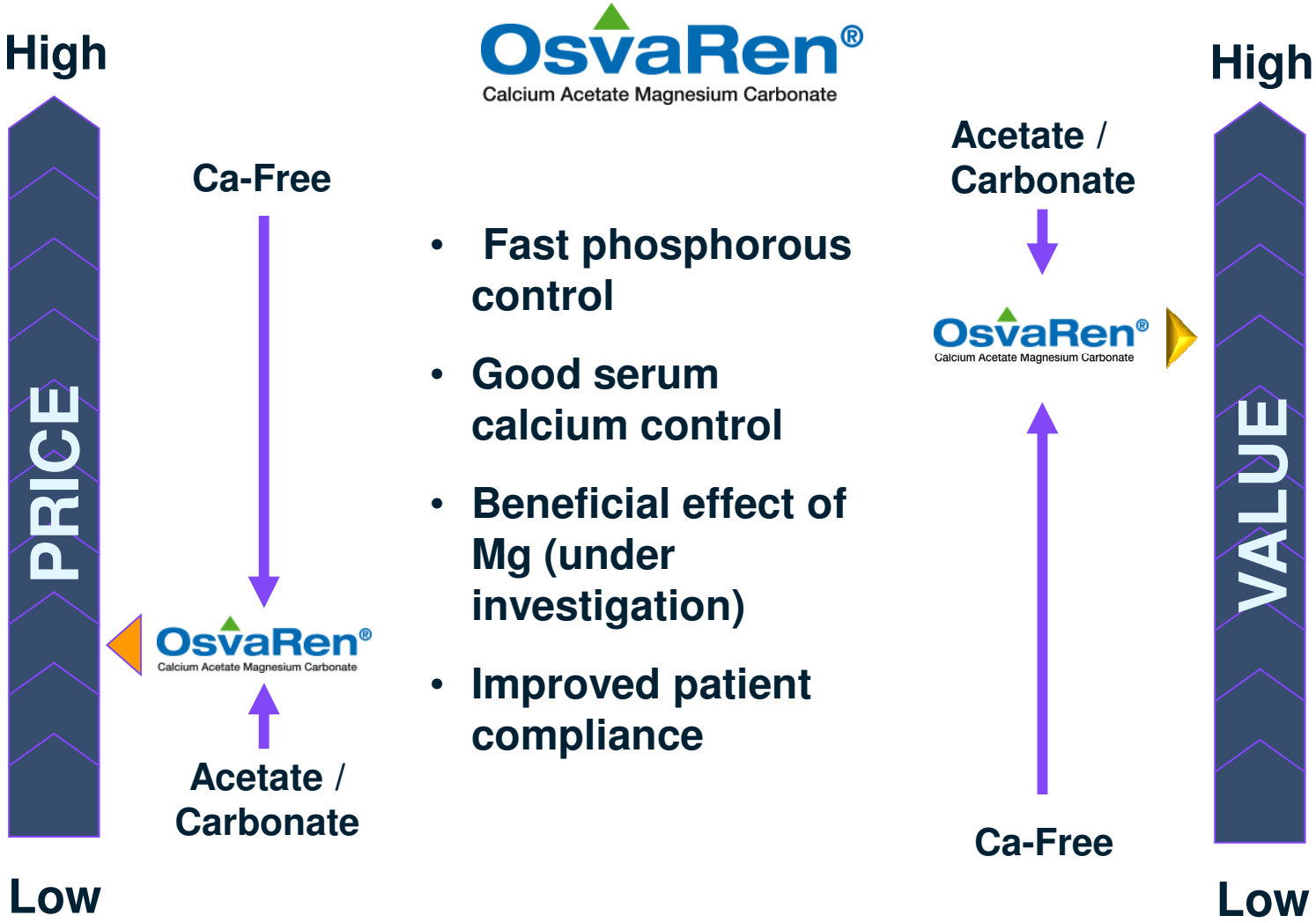
Study of 515 dialysis patients: Elevated magnesium levels are associated with improved survival

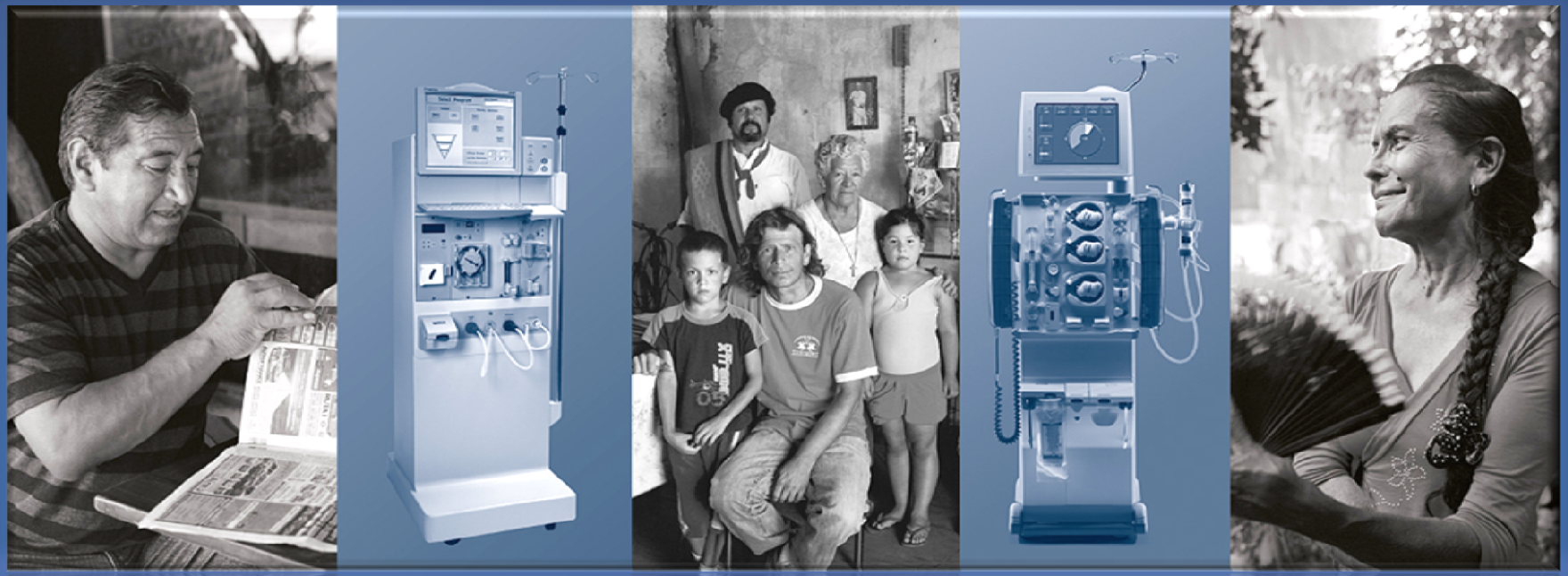
Lacsson 2009



27,544 dialysis patients (FMCNA): Elevated magnesium levels are associated with lower risk of mortality

Summary


High
PRICE
Low
Ca-Free
OsvaRen®
Calcium Acetate Magnesium Carbonate
Acetate / Carbonate
OsvaRen®
Calcium Acetate Magnesium Carbonate
• Fast phosphorous control
• Good serum calcium control
• Beneficial effect of Mg (under investigation)
• Improved patient compliance
Acetate / Carbonate
OsvaRen®
Calcium Acetate Magnesium Carbonate
Ca-Free
High
VALUE
Low



Thank You!

Fresenius Medical Care

Hydration Management
North American Strategies for Commercialization

Mark Costanzo, President

Renal Therapies Group of FMCNA

Fresenius Medical Care

Fluid Management Components Under Study At Fresenius Medical Care

Fresenius Medical Care

Sodium (salt) management

- Alignment of serum and dialysate sodium

Determination of the target weight/dry weight

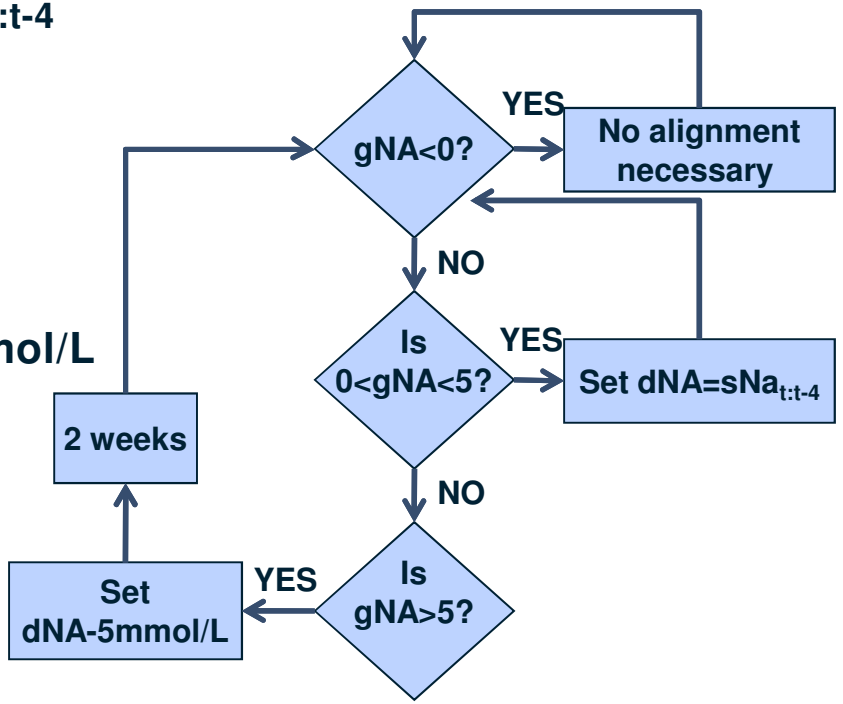
- Application of bioimpedance and plasma-refilling rate

Method to Correct Simplified Na+ Alignment Algorithm

- Calculate mean of patient-specific serum Na+ for the past four months ($sNa_{t:t-4}$)
- Calculate Na+ gradient (gNa) =

  dialysate Na (dNa) - $sNa_{t:t-4}$
- Na+ Alignment
  - If gNa < 0 ➔ no alignment is necessary
  - If 0<gNa <5 ➔ set dNa = $sNa_{t:t-4}$
  - If gNa > 5 ➔ set dNa = current dNa –5mmol/L

  (and reassess in two weeks)



Hydration Management Flow Diagram

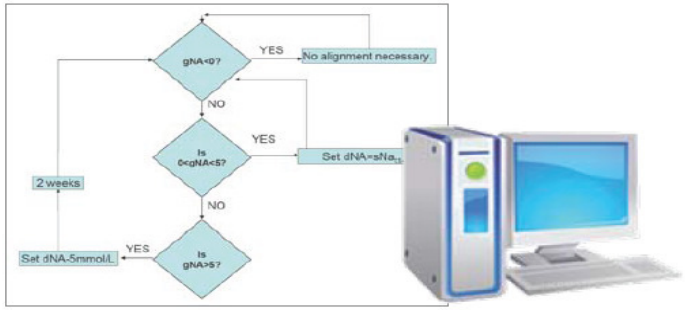
Fresenius Medical Care

Physician receives report and generate order for Dialysate Na+.

2008T administers treatment prescribed Dialysate Na+

Spectra Labs

Na+ Serum



Algorithm generates Dialysate Na+ recommendations.

Dry Weight:
A Problematic Measure, in Practice

- **Dry Weight - the weight below which patients develop intradialytic hypotension (IDH) on HD**
- **Hypotension may occur in overhydrated patients when ultra filtration exceeds plasma refilling rate**
- **Physicians prescribe a target weight (TW) based on clinical assessment of the patient**
- **Currently, there are no routine methods available to objectively assess DW**

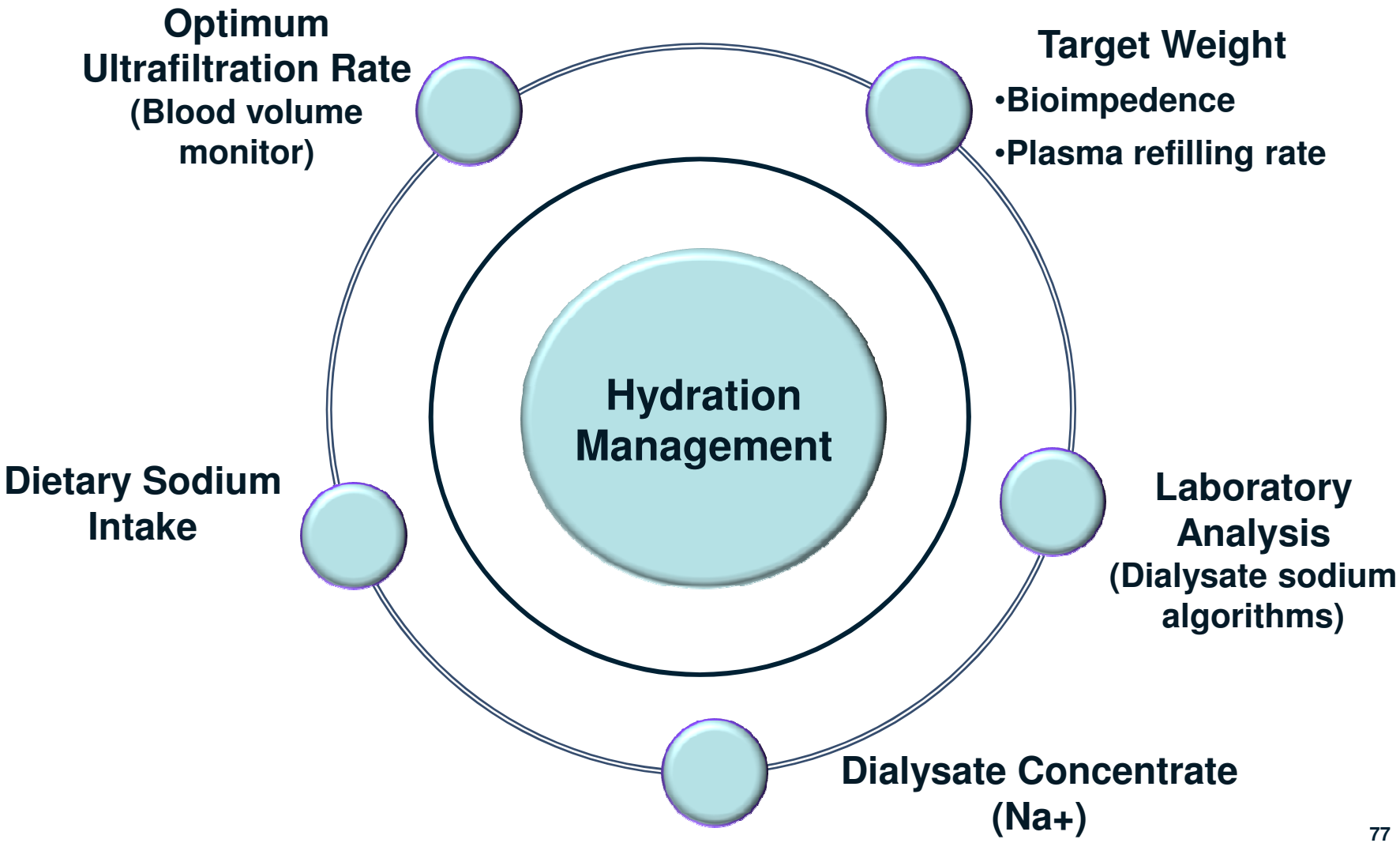
Current Dry Weight Methodologies Technology for Volume Management

Fresenius Medical Care

Blood Volume Monitoring	Blood Temperature Monitoring	Bioimpedance
Volume management with biofeedback technology	Achieving target dry weight while maintaining cardiovascular stability	Determining target dry weight

* not 510k cleared

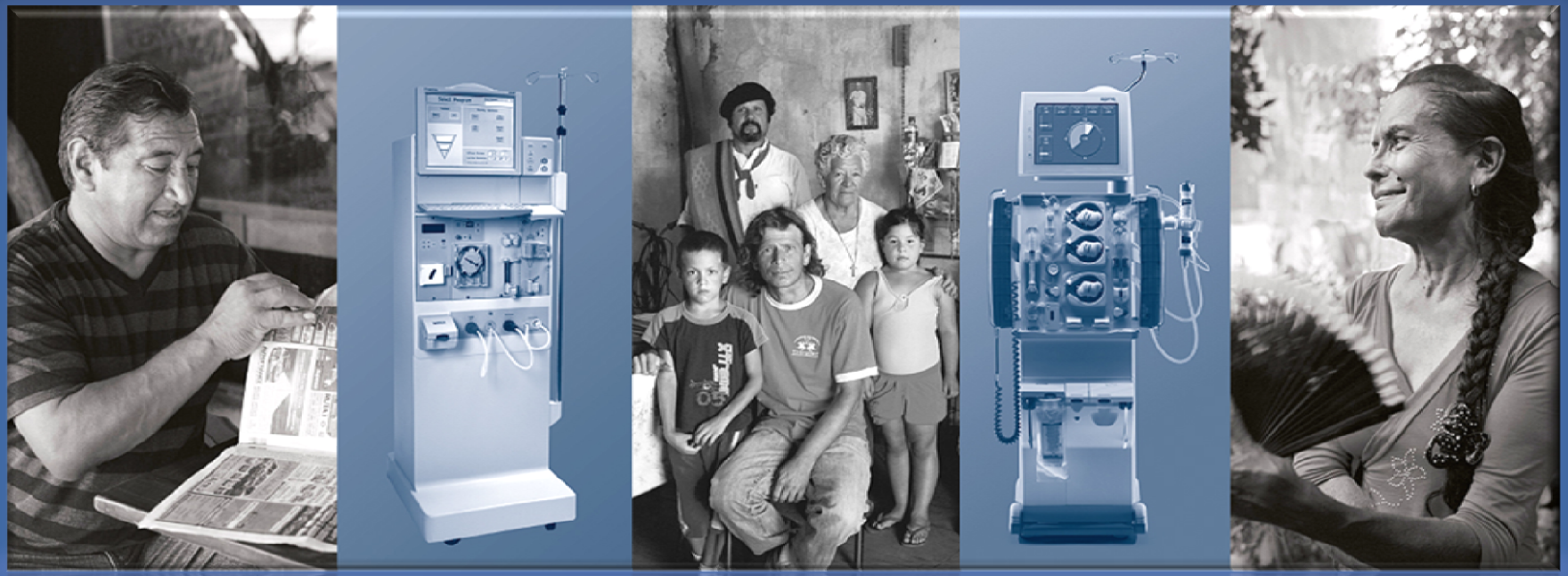
Global Strategy – Renal Pharma/Therapy – Hydration Management



2008T with CDX
Access to Data is Essential for Hydration Management

Fresenius Medical Care

- **Fresenius Clinical Data Exchange™ (CDX) - provides access to clinic MIS system and dialysis treatment data on the 2008T platform**
- **Lab data and other key MIS content displayed on 2008T for comprehensive prescription decision making**
- **Online data from blood volume monitor/ bioimpedence measurements used for feedback control**
- **2008T allows chair side documentation for adjustment of prescription**



Anemia Management

Fresenius Medical Care

Anemia Management

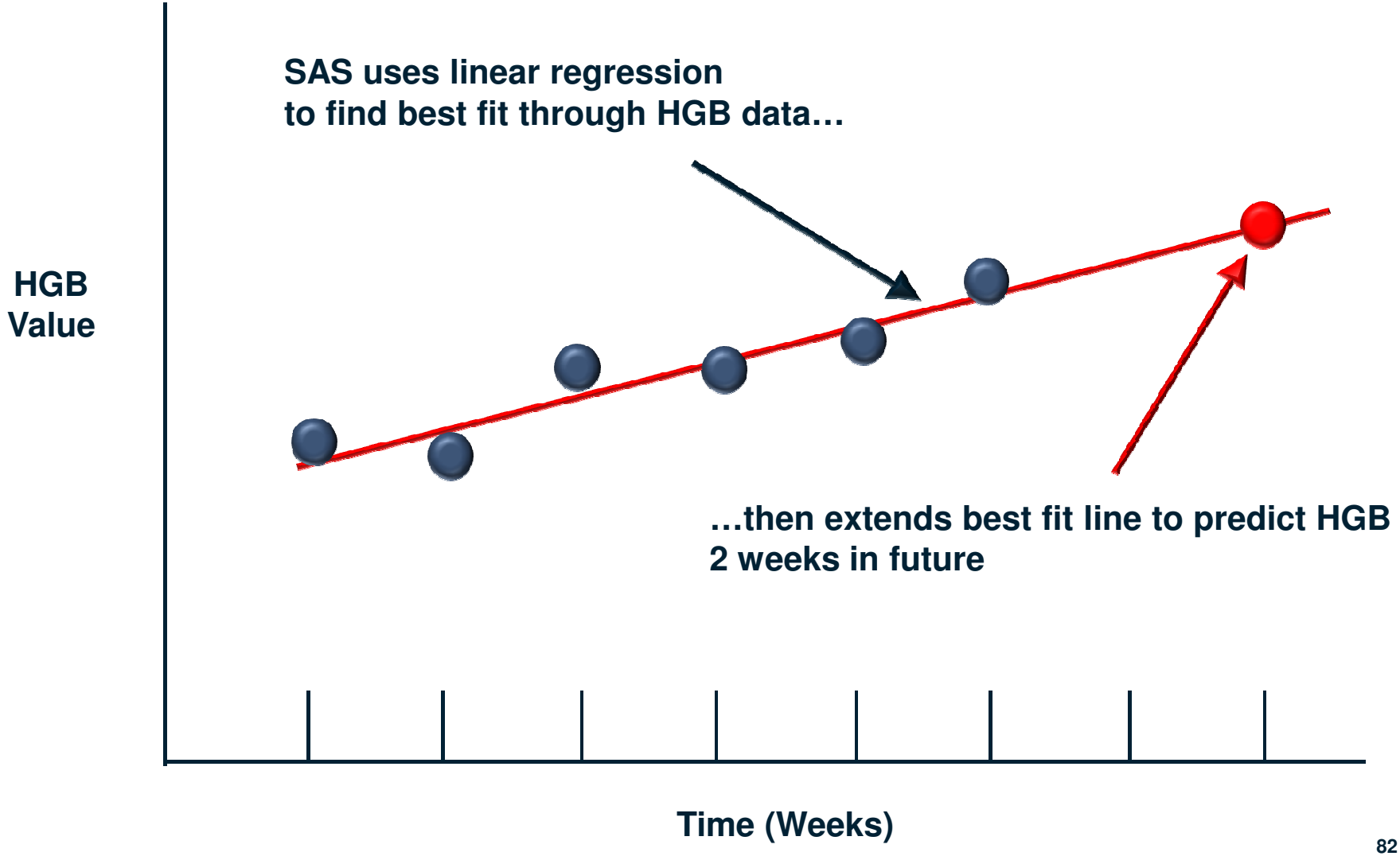
- Improving Anemia Management and Outcomes
- Impact of Bundle
- Narrowing the Distribution to 10 -12 g/dl
- Improving IV Iron Management
- Reduced Inflammation

Narrowing the Distribution to 10–12 g/dL with Recommended Epogen Dose (RED) Algorithms

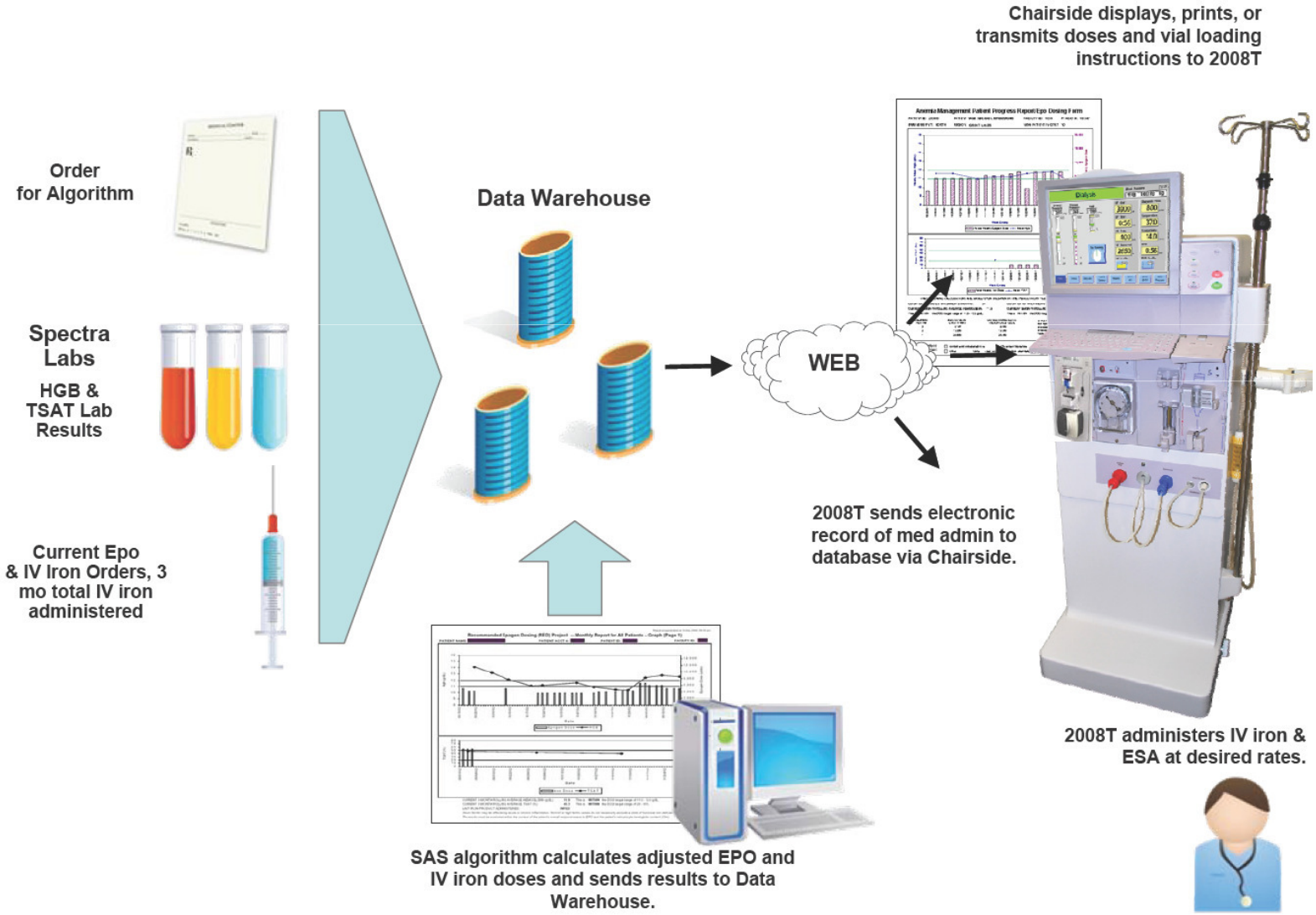
Fresenius Medical Care

- Spectra Lab Results:
  - Weekly HGB values (up to 4 mo data)
  - Monthly TSAT values (up to 4 mo data)
  - Possibly latest ferritin value in past 4 mo (max value for IV iron)
  - Optional other lab values relevant to hyporesponse, such as albumin, CRP, aluminum, etc.
- Clinical Data:
  - Current Epogen prescription (dose and frequency)
  - Current IV iron prescription (dose, frequency)
  - Total IV iron administered in past 3 months prior to first run of algorithm. (Later, the HD machine or computer running the algorithm can accumulate this information.)

Diagram of HGB Extrapolation

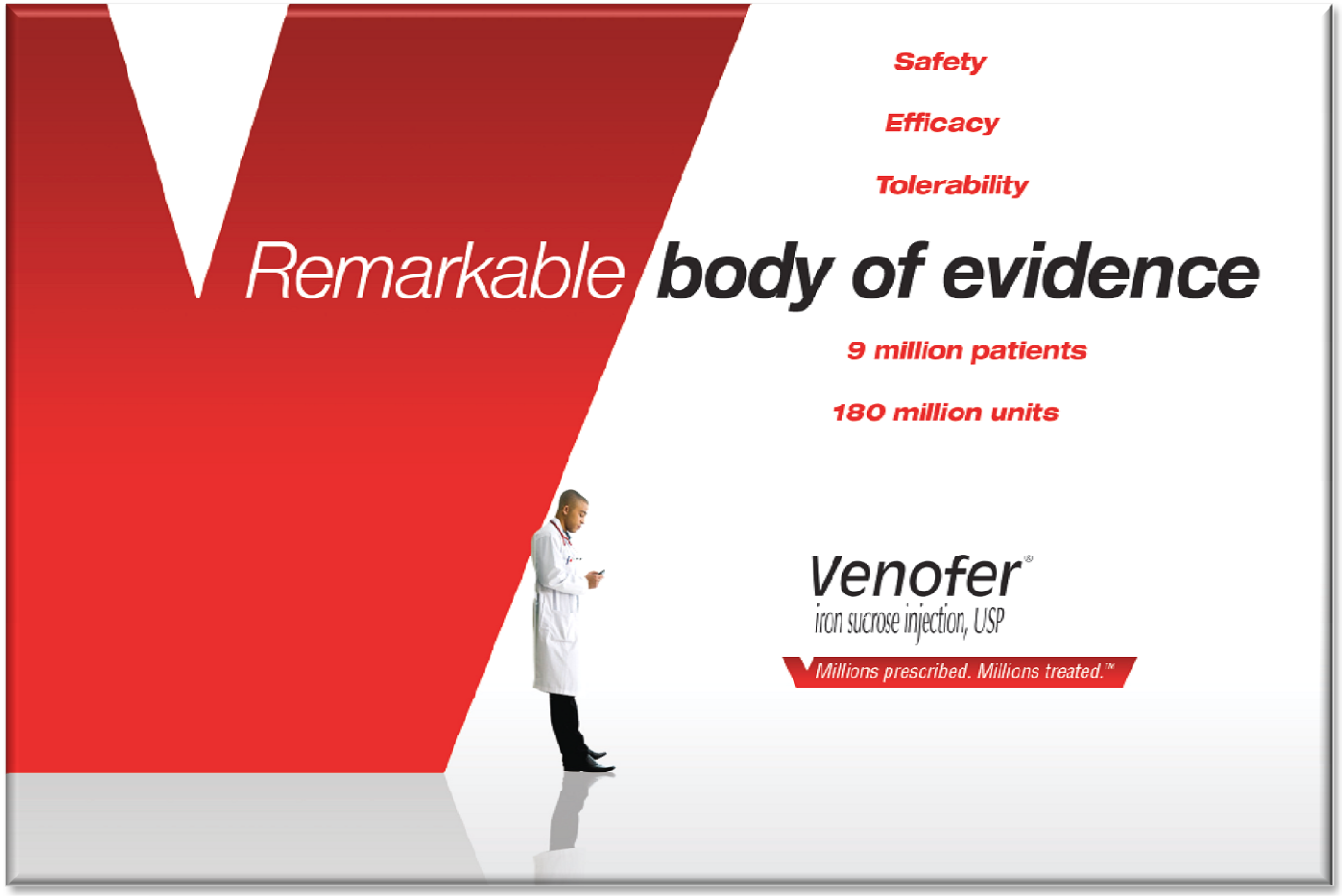


Fresenius Medical Care Implementation of Anemia Management Algorithm



Venofer - Iron Sucrose For Effective Iron Management

Fresenius Medical Care



PharmaTech
Venofer Pump Features/Benefits

- **Ease of use – Set dose and rate**
- **Accurate delivery - Precise dose and rate delivery**
- **Reduces set-up time – eliminates syringe fill and labeling**
- **Cost effective delivery**

PharmaTech
Anemia Management Module Concept

Features/Benefits:

- **Ability to tailor ESA and iron dosing to actual doses administered and optimized with the FMC algorithm.**
- **Doses entire deliverable volume of ESA from vial**
- **Documentation displayed for the dose administered**
- **Simplifies RN's task of measuring out exact ESA doses into the syringes**

Water Purity: Does it Make a Difference in Reducing Inflammation?

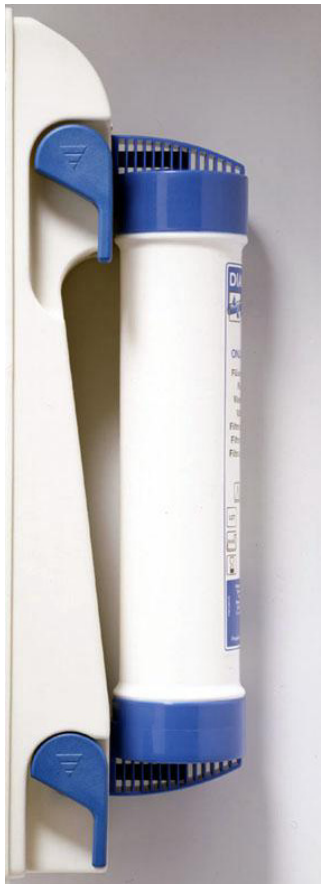
- Bacteria, endotoxin and DNA fragments in the dialysate may pass into the blood with highly permeable dialysis membranes.
  - Monocytes activated by bacteria-derived substances secrete a variety of pro-inflammatory cytokines (IL-1β, IL-6 and TNF)
  - This inflammatory state is associated with malnutrition, accelerated atherosclerosis and a reduced erythropoietin responsiveness
- Ultrapure dialysis fluid is associated with:
  - improved nutritional status
  - an increased responsiveness to administration of iron and erythropoietin

Ultrapure Dialysate

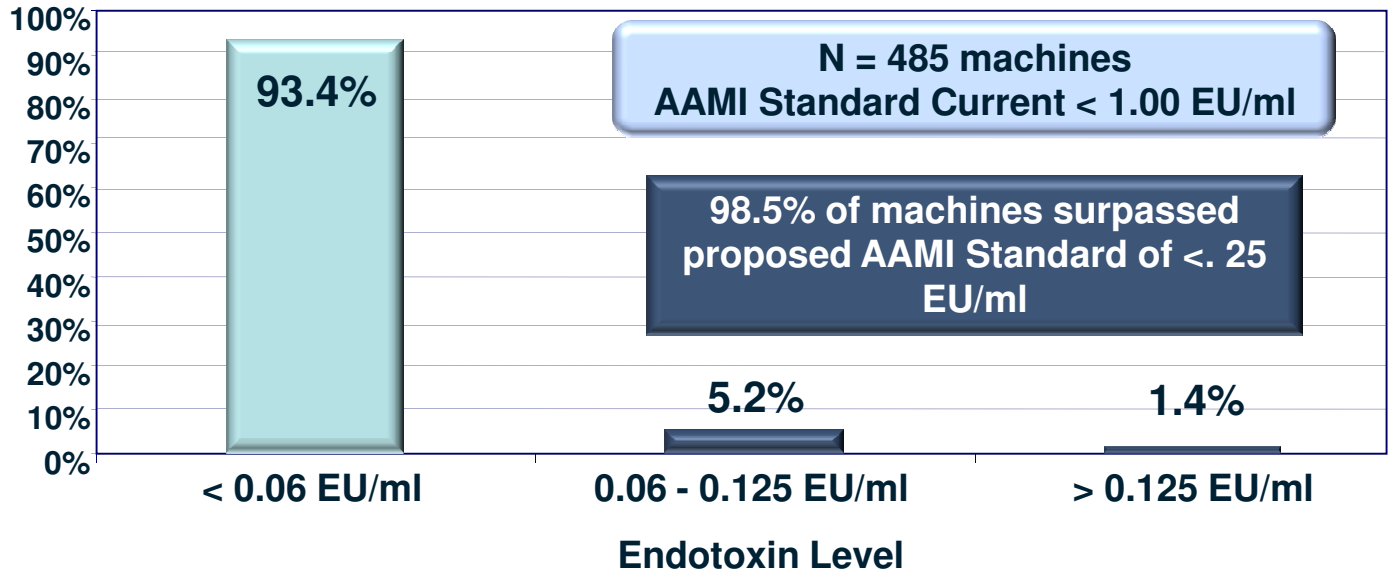
Corrective Measures

- Controlled ultrafiltration by placing Diasafe® Plus filters in the fluid path of standard HD machines
- Improve Water Quality
  - Reduce bioburden
  - Reduce dead space in centralized RO system

Diasafe® Plus
Exceeding Proposed AAMI Standards



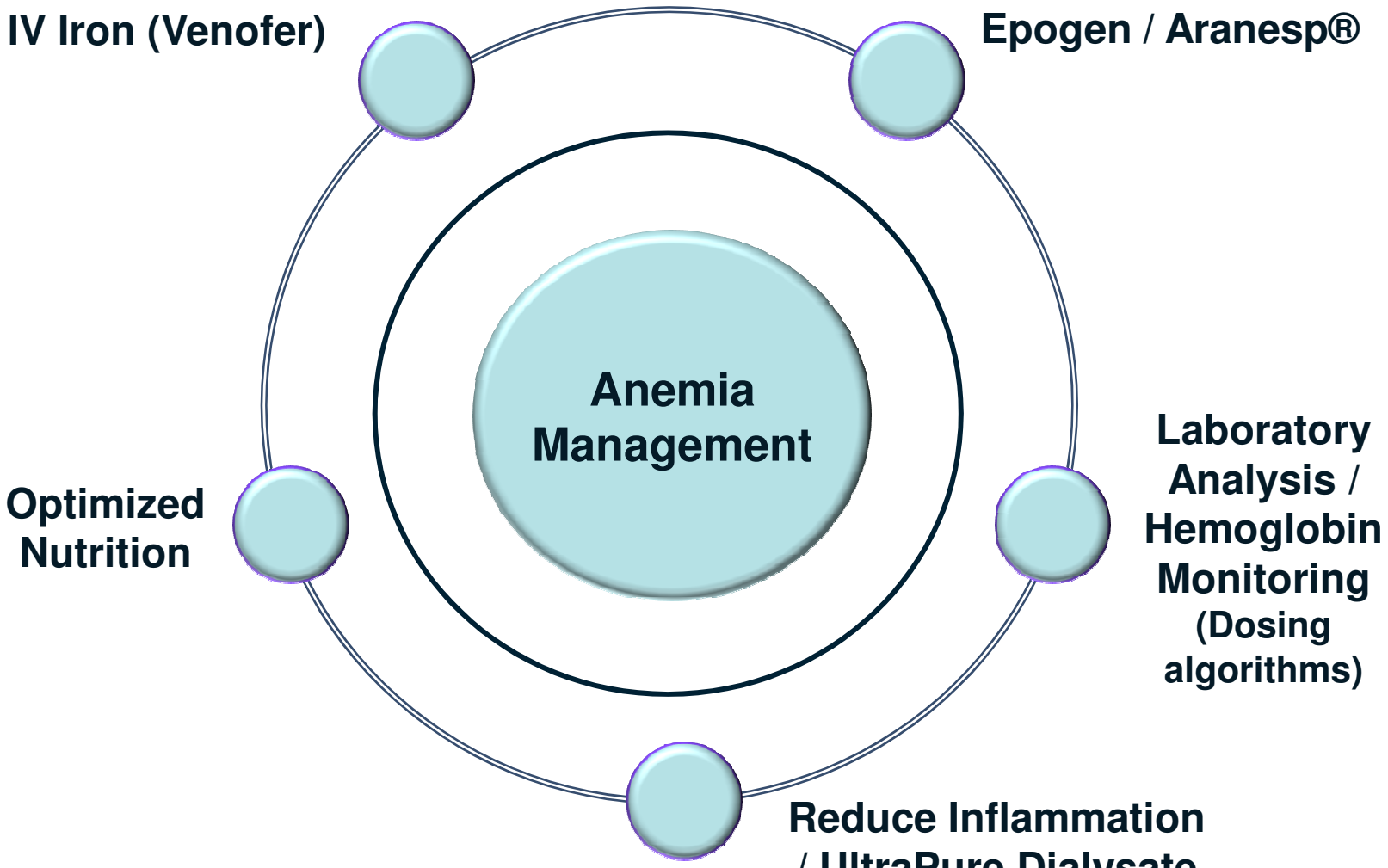
Dialysate Endotoxin Levels Using Diasafe Filters and Conventional Facility Water Treatment



Sands J. Stano M., Li Z., Bryant R., Ofsthun N., Updyke D., Lazarus J. (2004). Diasafe® decreases endotoxin Levels 16 fold below new AAMI standard. (Abstract submitted for ASN)

AAMI = Association for the Advancement of Medical Instrumentation

Global Strategy – Renal Pharma/Therapy – Anemia Management



2008T with CDX Access to Data is Essential for Anemia Management

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- **Online data from Venofer® or AMM module used for feedback control**
- **2008T allows chair side documentation for adjustment of prescription**

Bone Mineral Metabolism

Fresenius Medical Care

Bone Mineral Metabolism

- **Compelling Need**
- **Phosphate and Bone Mineral Management – PharmaTech**
- **Pharmaceutical Delivery System – FMCRx**

Compelling Need to Improve Phosphate & Bone Mineral Management

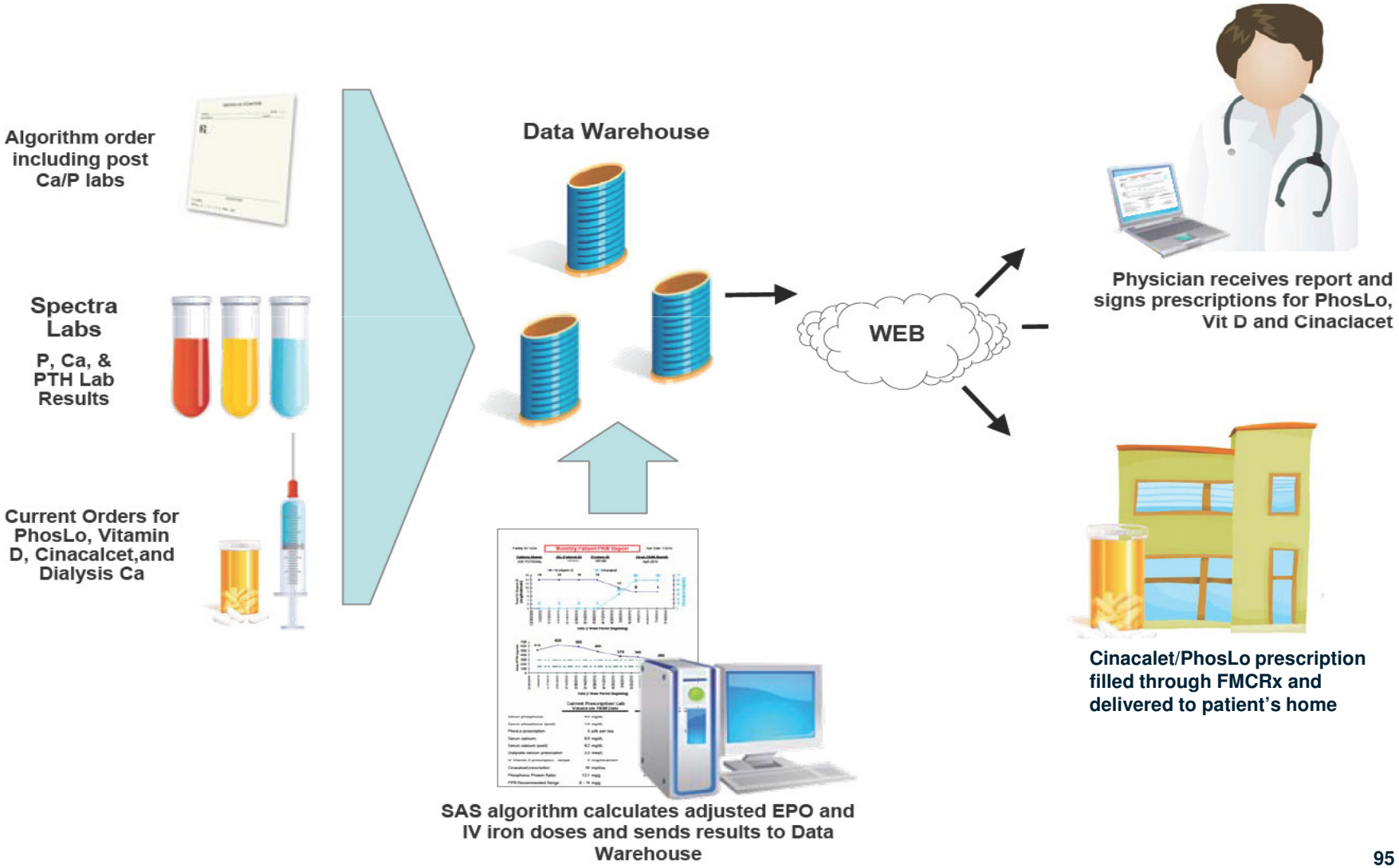
Fresenius Medical Care

Overall strong quality performance

% of patients	North America (USA) Q2 2009	North America (USA) Q2 2010	EMEA Q2 2009	EMEA Q2 2010
Kt/V ≥ 1.2	96%	96%	95%	95%
Hemoglobin = 10-12 g/dl	64%	68%	54%	54%
Albumin ≥ 3.5 g/dl	82%	81%	88%	86%
Phosphate 3.5-5.5 mg/dl	52%	55%	61%	61%
Hospitalization days	10.1	9.9	8.5	9.2

* The hospitalization rates for the US reflects adoption of CMS policy

PharmaTech - Implementation of Phosphorus Kinetic Modeling



Phosphate Binder Portfolio

- PhosLo (calcium acetate gelcap)
- PhosLo authorized generic
- Phoslyra (liquid calcium acetate formulation)
  - Clinical trials have proven safety and efficacy. Waiting for FDA to complete upstream reviews
  - Aim is to enhance patient adherence and thus serum P management by reducing pill burden, reduce fluid ingestion and providing an alternative for patients with swallowing difficulties
- Interest in licensing of branded or non-calcium based P binder: PA-21

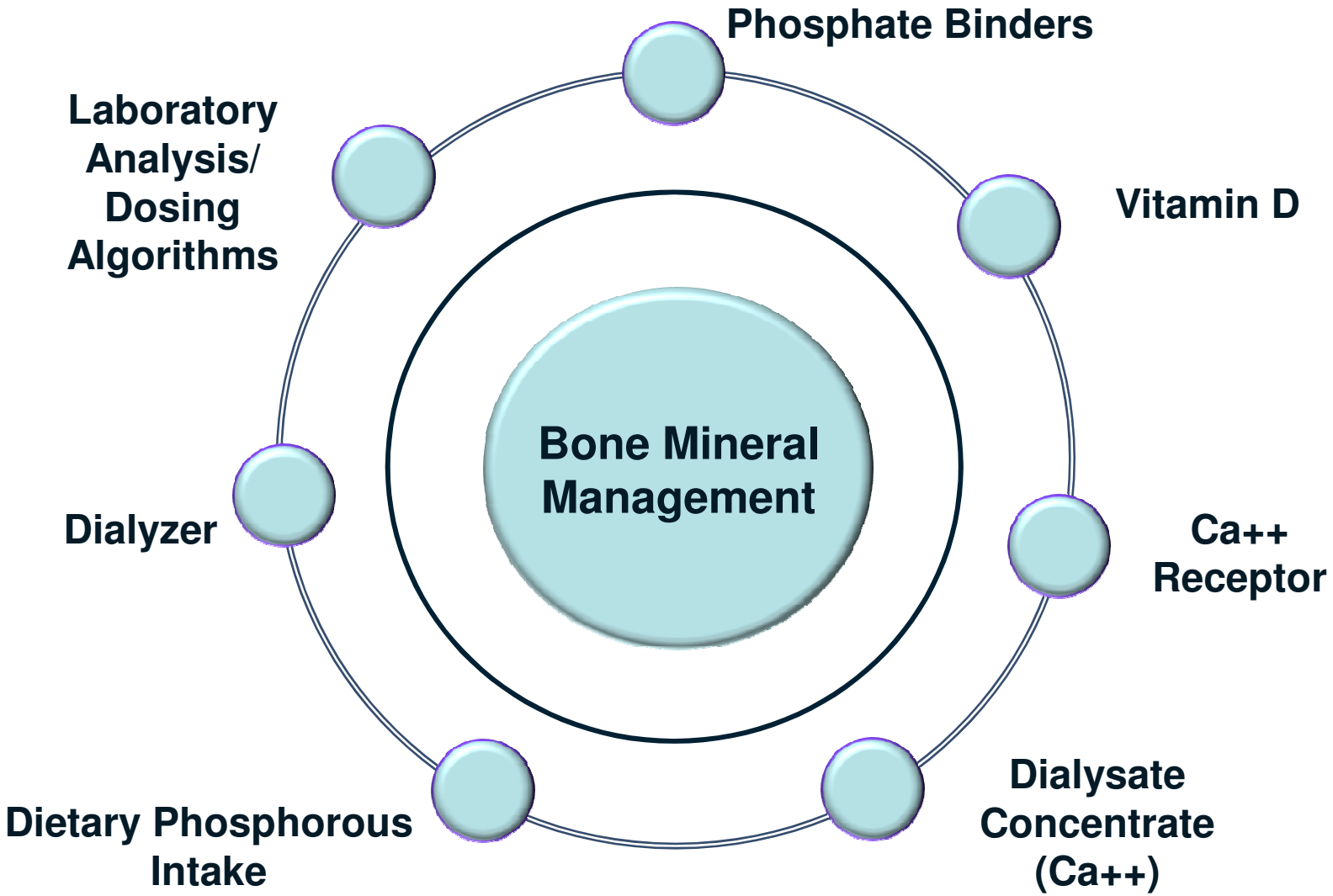
FMCRx

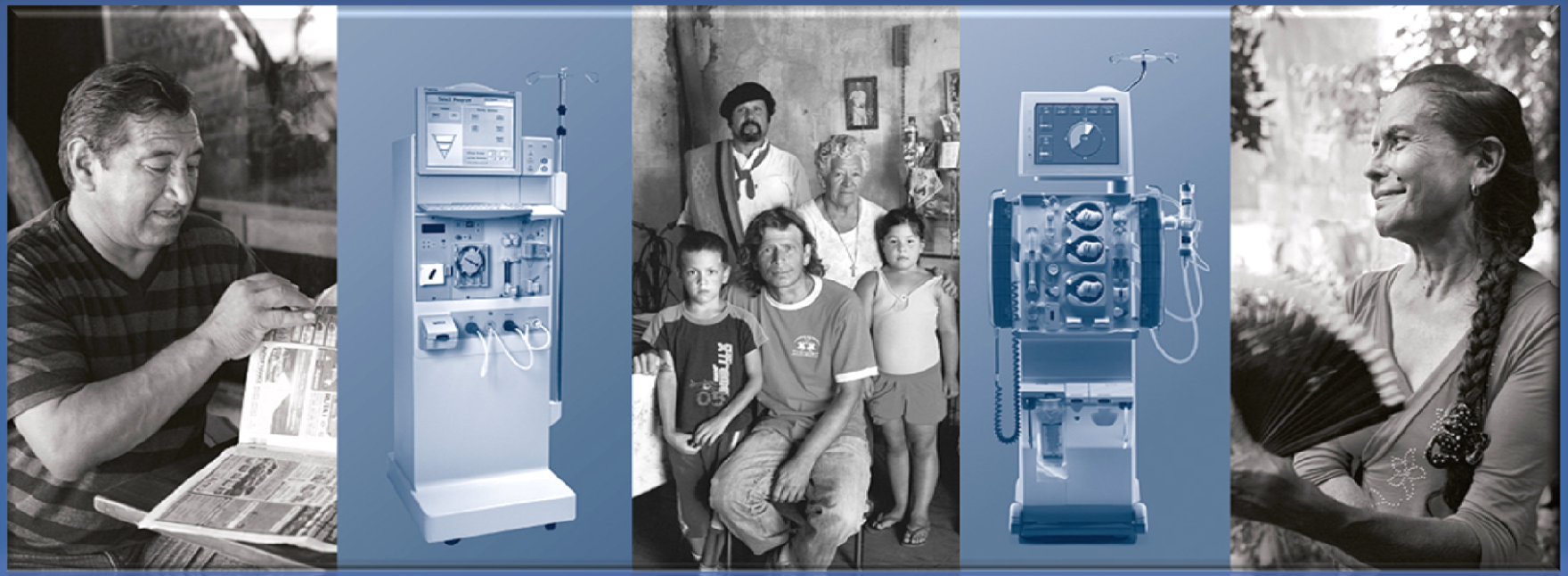
FMCRx is a renal - focused specialty pharmacy with pharmacists who are trained on the special needs and medications of CKD and ESRD patients

Benefits to FMCNA include:

- **Medication management improves compliance to drug regimen**
- **Improved adherence leads to improved quality of life for patients**
- **Convenience, shipped to the patient's home**
- **Medication summary report of all drugs prescribed and filled sent to clinics each month**
- **Control costs under the bundle**

Global Strategy – Renal Pharma/Therapy – Bone Mineral Management





Thank you!

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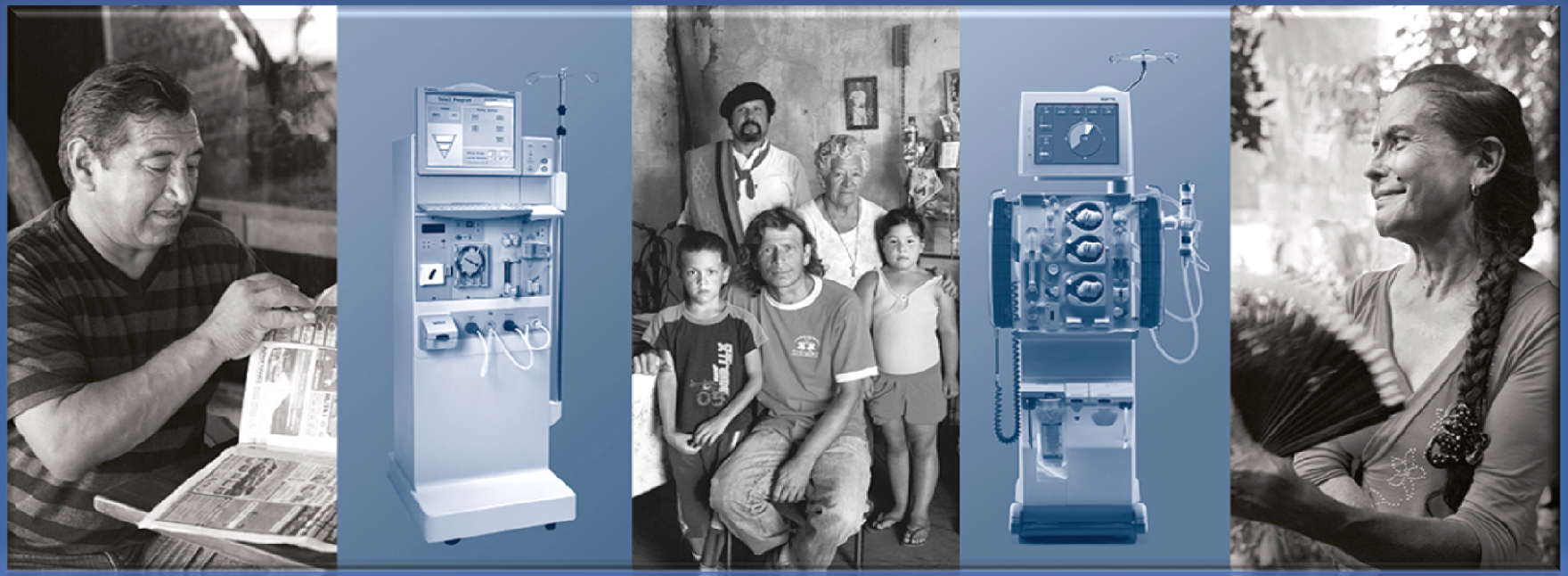

“In Touch – Leading & Succeeding In Renal Therapy Worldwide”

Michael Brosnan, Chief Financial Officer

Capital Markets Day
Luton, September 1–2, 2010

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Agenda

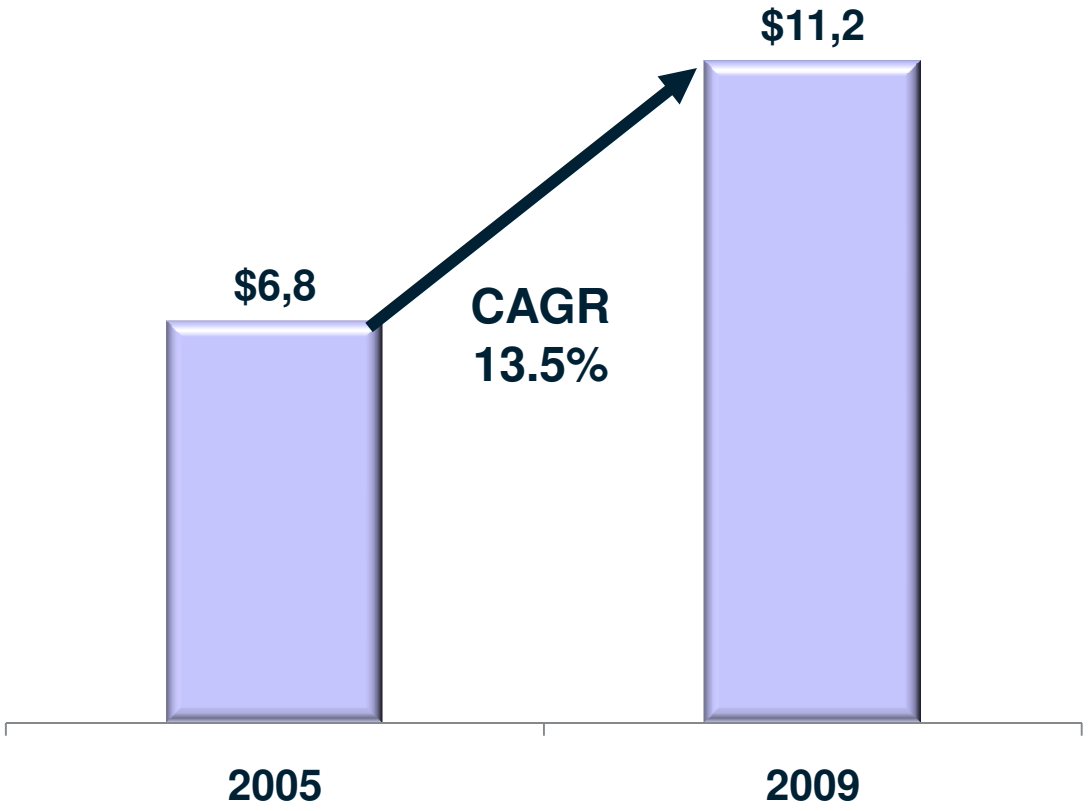
1. **Historical Highlights**
2. 2010 Financial Guidance
3. Goal 13 – Strategic Financial Objectives
4. Goal 13 – Strategic Financial Objectives - Capital Structure
5. Summary

Historical Highlights
Topline Growth Drivers

Topline Growth Drivers

- Geographic Expansion
- Market Share Gains
- Revenue Per Treatment Increases
- Geographical Mix Management
- Successful Execution of Acquisitions and Integration Strategy

Revenue



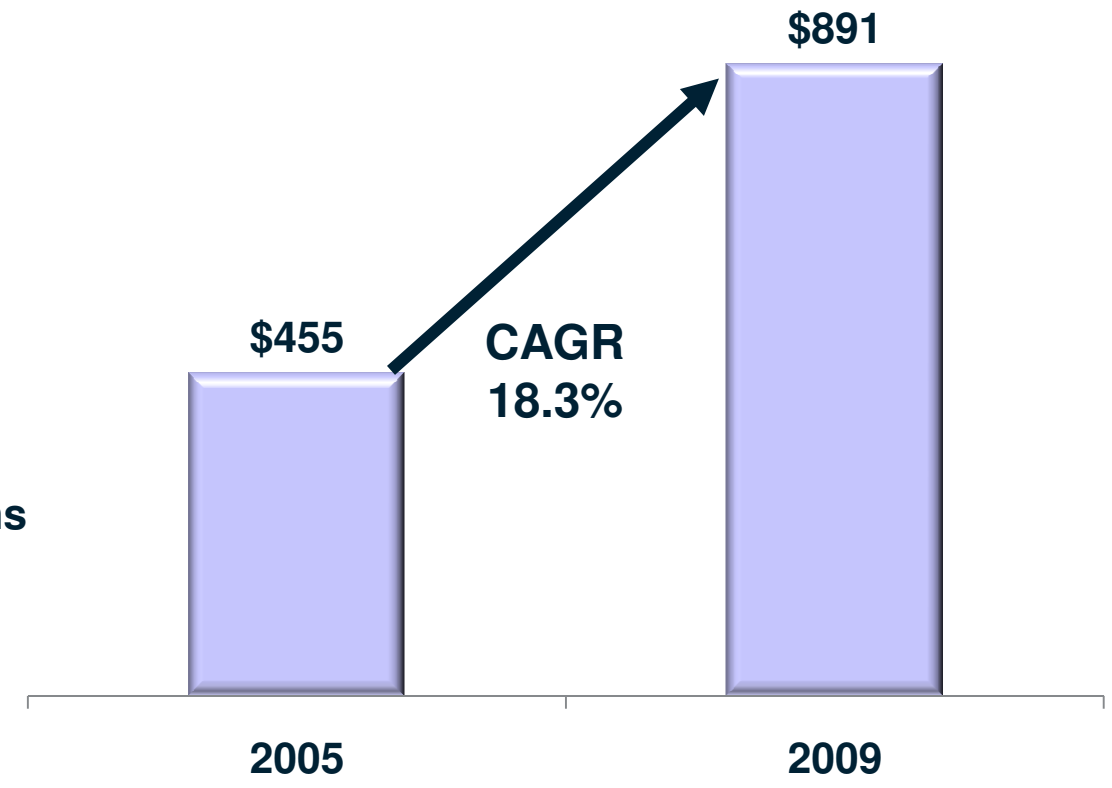
Historical Highlights
Earnings Growth Drivers

Earnings Growth Drivers

- Scale Effects
- Revenue Per Treatment Increases
- Manufacturing Performance
- Product Mix
- Clinic Cost Control
- Favorable Financing Conditions
- Slightly Lower Tax Rate

Net Income

attributable to FMC AG & Co. KGaA

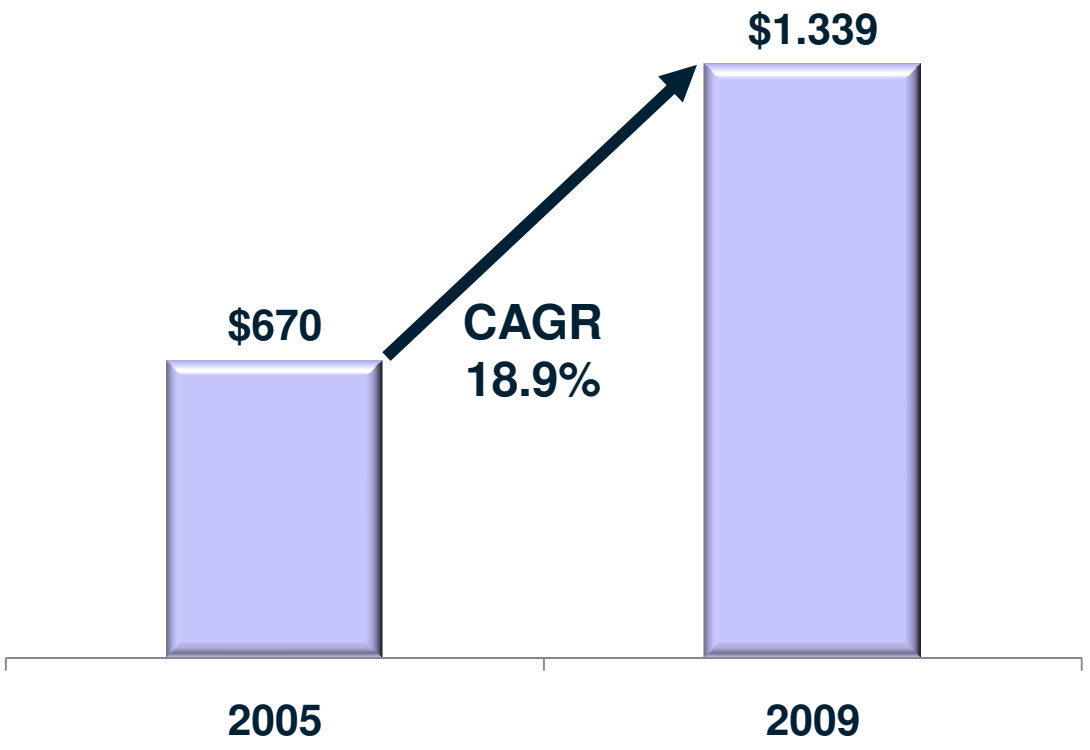


Historical Highlights - Balance Sheet And Cash Flow Growth Drivers

Balance Sheet and Cash Flow - Growth Drivers:

- Strong Operating and Free Cash Flow
- Increasing Net Income Levels
- Excellent Working Capital Management

Operating Cash Flow



Historical Highlights - Our Credibility With The Capital Markets

Meeting Guidance and Investor Expectations

	2005	2006	2007	2008	2009
Revenue	✓	✓	✓	✓	✓
Net Income attributable to FMC AG & Co. KGaA	✓	✓	✓	✓	✓
Leverage	✓	✓	✓	✓	✓
Investments	✓			✓	✓
Operating Cash Flow	✓	✓	✓	✓	✓

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Financial Guidance Outlook 2010

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Fully on Track for 2010 Targets

US$ millions		Guidance
Net revenue		> $12,000
Net income attributable to FMC AG & Co. KGaA		$950 - 980
Leverage ratio (Debt/EBITDA)		< 2.5
Capital expenditures		~ $550 - 650
Acquisitions	Updated	up to $500

Financial Guidance
Goal 10 - Achievements

	Goal 10	2010 - Guidance
Revenues	> $ 11.5 bn	> $12.0 bn
***thereof:* Pharma Sales** incl. internal sales	$ 400 million	~ $ 400 million
EBIT Margin	~ 20 bps (incremental increases p.a.)	~ 15.6 %
Interest Expense	< 6.5%	< 5.5%
Tax Rate	< 38 %	34.5% - 35.5 %
Net Income / EPS attributable to FMC AG & Co. KGaA	Low to mid-teen (growth p.a.)	$ 950 - $ 980 million
Operating Cash Flow	Maintain to slightly improve current level of 10% of Revenue	> 10 % of Revenue
CapEx & Acquisitions	~7 % of Revenue	~9 % of Revenue

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Goal 2013 Strategic Financial Objectives
Revenue Growth
(Average Annual, Constant Currency)

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	Global Growth	Price/Mix Increase	Market Share & Acquisitions	Total
Services	5 – 6%	up to 2%	1 – 2%	6 – 9%
Products	4 – 5%	up to 1%	1 – 2%	5 – 7%
Total Objective				6 – 8%

Goal 2013 Strategic Financial Objectives
EBIT Margin

Current	2013
~ 15.6%	Average incremental increase of approximately 10 to 20 basis points per year

- Scale effects
- Cost control
- Strategic investment / placement
  - US: Bundle / De novos / Payor mix
  - International: Leveraging the existing organizational structure through expansions
- Manufacturing capacity / demand management and efficiencies

Goal 2013 Strategic Financial Objectives
Net Interest Expense

Current	2013
< 5.5%	~ 6 to 6.5%

- Amend & extend the existing Senior Credit Agreement by two years (Term Loan A and Revolving Facility)
- Issuance of Senior Bond early 2011 to refinance subordinated Trust Preferred Securities
- Issuance of Senior Bond to refinance Term Loan B of the Credit Agreement in mid 2012

Goal 2013 Strategic Financial Objectives
Effective Tax rate

Current	2013
34.5 – 35.5%	35 – 36%

- Continue on a sustainable basis

Goal 2013 Strategic Financial Objectives
Net Income / EPS

Objective	Current	2013 Annual Growth
Net Income attributable to FMC AG & Co. KGaA	$950 – 980 million	High single to low double digits
EPS		High single to low double digits

Goal 2013 Strategic Financial Objectives
Cash from Operations

Current	2013
> 10% of Revenue	> 10% of Revenue

- Improve profitability
- Continue with effective working capital management
  - Strong collection process
  - Maintain effective inventory management

Goal 2013 Financial Objectives – Capital Expenditures and Acquisitions

Current	2010
Capex & Acquisitions ~9% of Revenue	Capex & Acquisitions ~7% of Revenue

- Take advantage of existing growth opportunities
- Prudent investment to avoid dilution of return on invested capital

Goal 2013 Strategic Financial Objectives

	2010 - Guidance	Goal 13
Revenues	> $12bn	6-8% Growth*
EBIT Margins	~ 15.6%	10 - 20 bps (incremental increases p.a.)
Interest Expense	< 5.5%	6.0 to 6.5%
Tax Rate	34.5 – 35.5%	35 – 36%
Net Income attributable to FMC AG & Co. KGaA	$950 - 980	High single to low double digits
Operating Cash Flow	> 10% of Revenue	> 10% of Revenue
CapEx + Acquisitions	~9% of Revenue	~7% of Revenue

*Constant Currency

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Goal 13 – Strategic Financial Objectives Capital Structure

- FME has current guidance Debt/EBITDA ratio of < 2.5x
- Strategically our franchise can operate effectively with ~ 2.5x leverage
- Equivalent to a credit rating of BB to BBB-
  - Industry well suited to “reasonable” leverage
    - Non-cyclical
    - Predictable cash flow
    - Attractive profitability
    - Foreseeable investment needs
- This provides the flexibility to seek further investment opportunities and finance them with debt

Goal 13 – Strategic Financial Objectives
Capital Structure

Debt Portfolio

- Amend & extend Senior Credit Agreement
- Transition to single tier
- Lengthen average maturity
- Target committed and unutilized facilities at $300 – 500 million

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Summary

Leadership	• Maintain our global leadership position • Continue to shape the future of the dialysis industry
Quality	• Maintain superior quality in products and services
Growth	• Benefit from product innovations • Take opportunity of international growth potential • Introduce new therapy offerings • Continue horizontal expansion of service and product range

Financial	• Control cost and spending
	• Seek attractive investment opportunities
	• Continue profitable growth momentum
	  • Revenue to grow 6-8% per annum, constant currency
	  • Earnings After Tax – high single to low double digits

Thank You for Your Interest in Fresenius Medical Care!

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