Comment les outils d'information et de communication, et l'analyse des méga-données vont elles bouleverser les soins dans l'insuffisance rénale chronique ?

Prof. Bernard Canaud
Chief Medical Officer, Center of Excellence Medical EMEA, Fresenius Medical Care, Bad Homburg
& Emeritus Professor, Montpellier University, School of Medicine, Montpellier

FHP
FÉDÉRATION DE L'HOSPITALISATION PRIVÉE

Maladie rénale chronique :
Actualité et devenir de la prise en charge

Mardi 21 juin 2016 – 10h00 à 17h00 (09h00 accueil)

SNL
Syndicat des Néphrologues Libéraux

Disclosure

Speaker name: Prof. Bernard Canaud

- ☐ I have the following potential conflicts of interest to report:
- ☐ Consulting
- ☒ Employment in industry (FMC)
- ☐ Shareholder in a healthcare company
- ☐ Owner of a healthcare company
- ☐ Other(s)
- ☐ I do not have any potential conflict of interest

Plan

1. **Défis actuels et à venir du traitement de l'insuffisance rénale chronique.** Un problème aux multiples facettes
2. **Solutions apportées par les outils d'information, de communication et d'analyse.** Un support à la prise de décision
3. **Expérience d'un gros opérateur de soins rénaux**
   Exemples concrets: Balance score card, Traitement de l'anémie
4. **Message final**
   Les outils d'information, de communication et d'analyse, le futur du traitement de la maladie rénale

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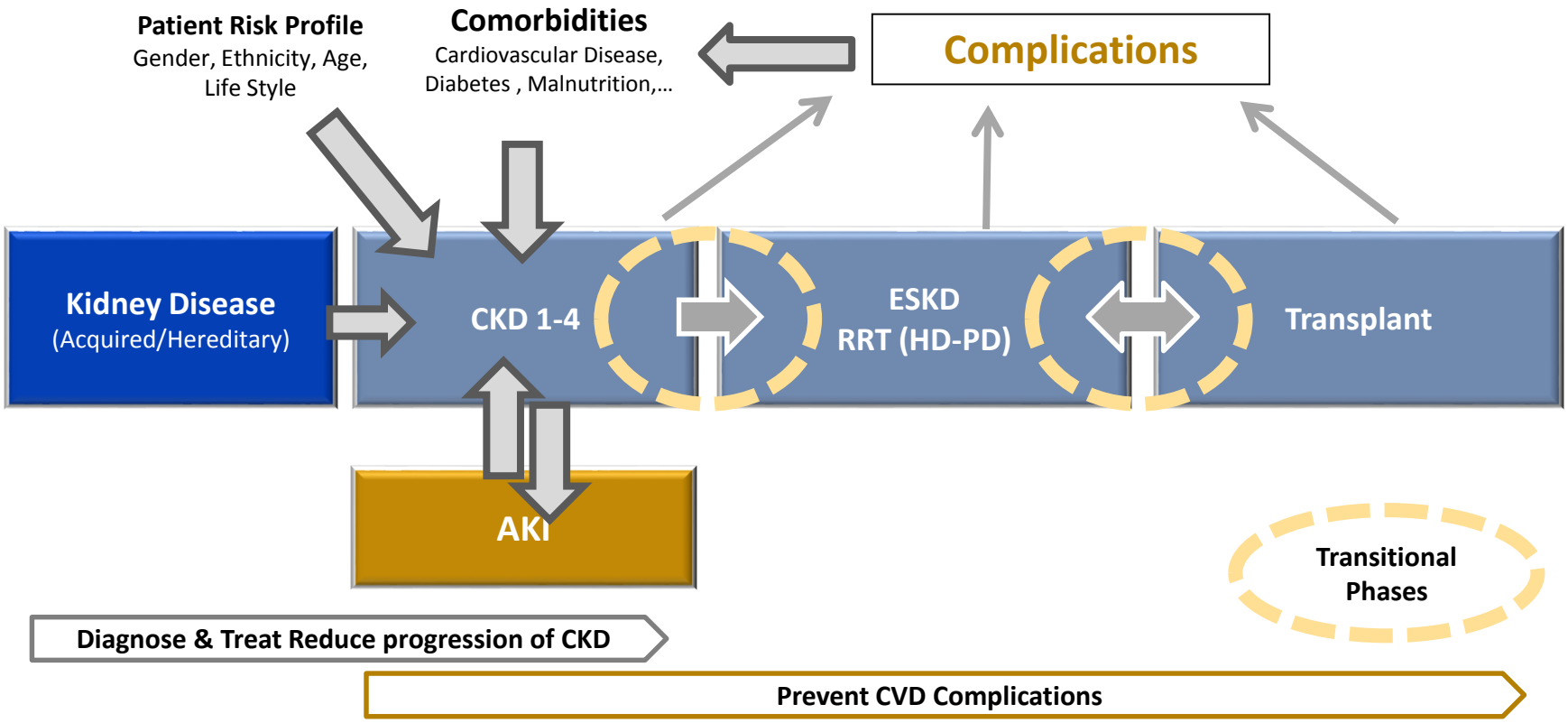
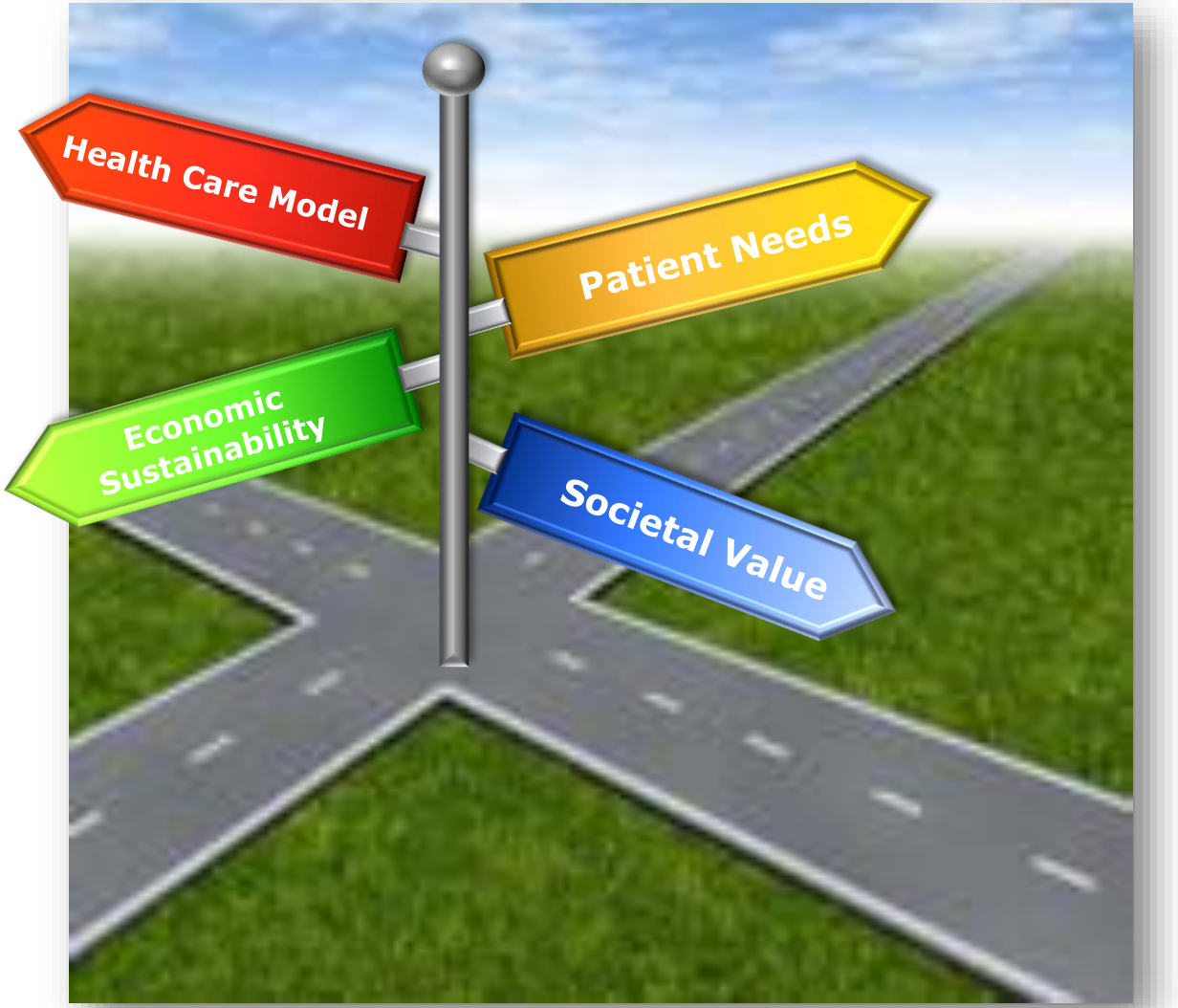
L’insuffisance rénale chronique est un long continuum pathologique qui accumule les complications

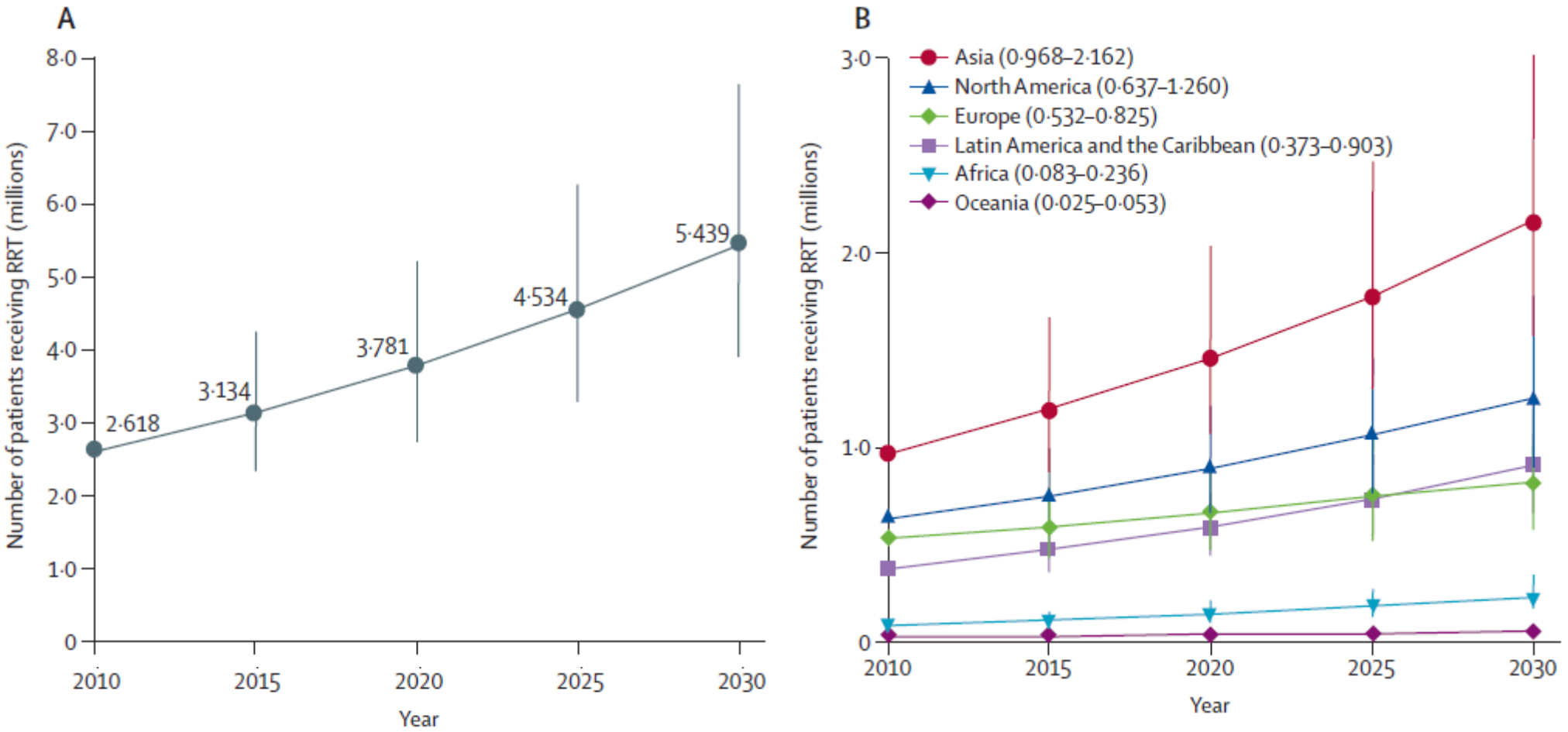


L’IRC est à la croisée des chemins



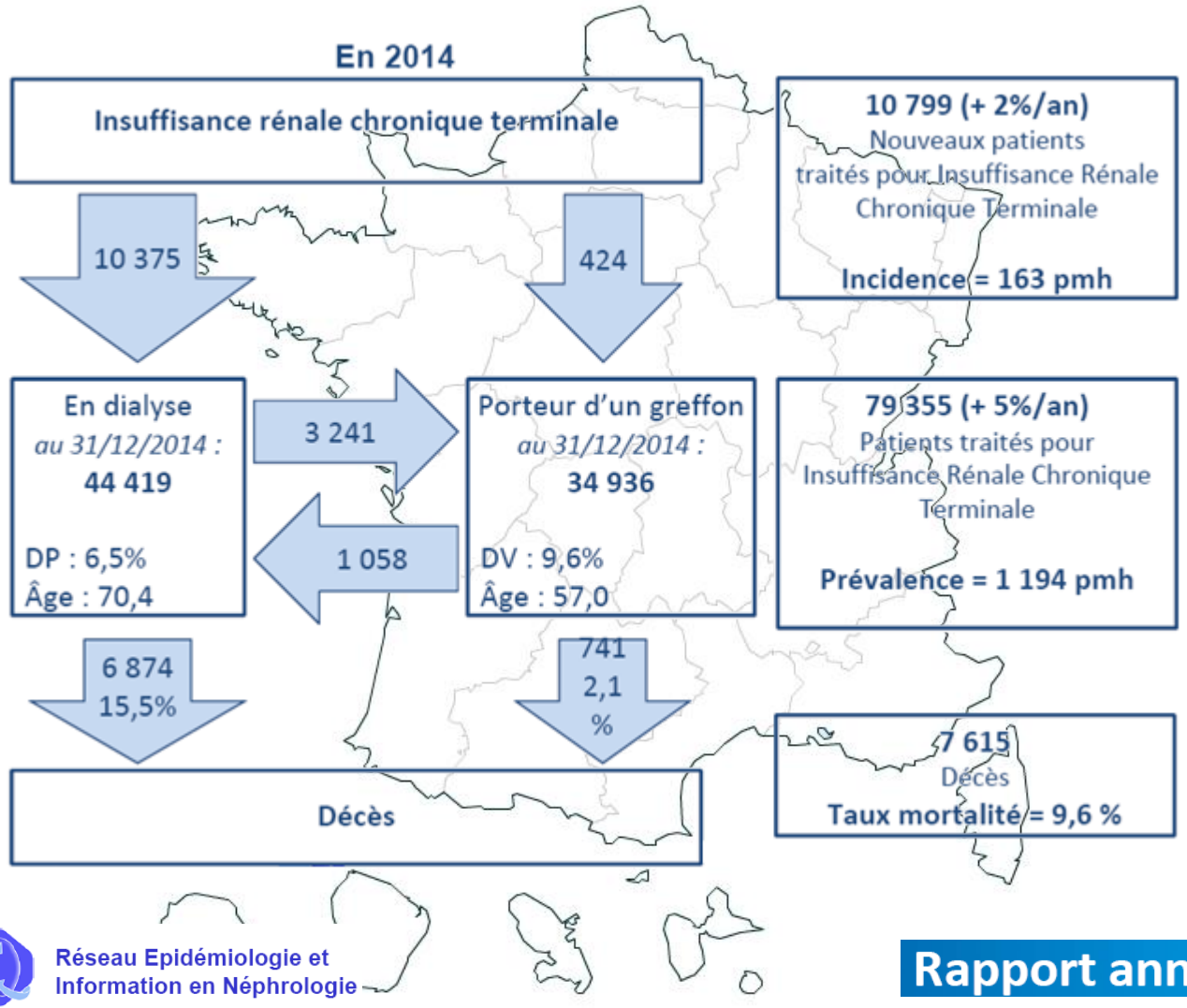
Le nombre de patients rénaux traités par dialyse va continuer à croitre

Estimated Number of Patients Undergoing RRT From 2010-2030



Liyanage T et al,. Lancet. 2015; pii: S0140-6736(14)61601-9.

Epidémiologie et fluxes de patients insuffisants rénaux chroniques traités en France



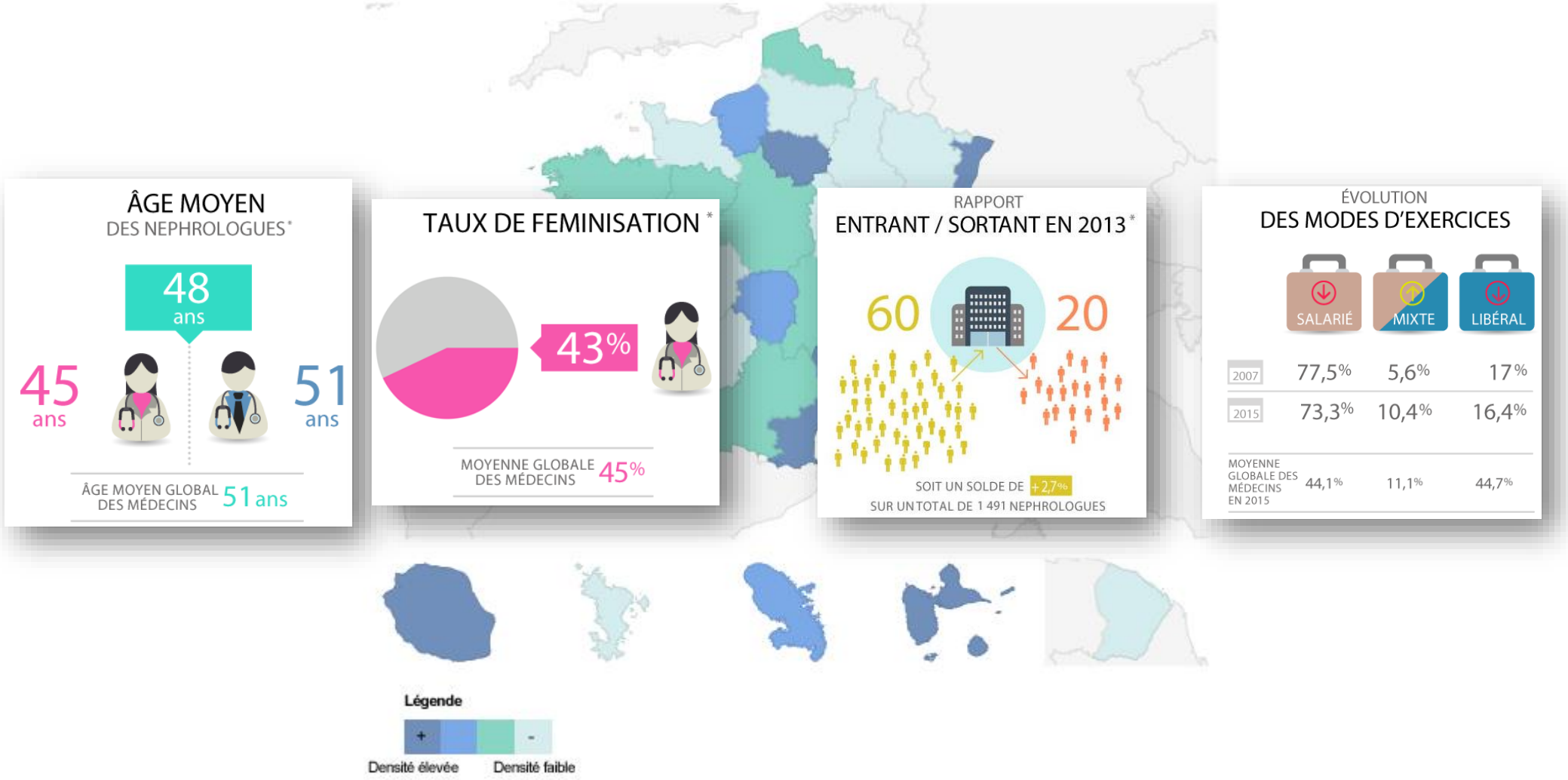
agence de la biomédecine

Réseau Epidémiologie et Information en Néphrologie

Rapport annuel REIN 2014

Couchoud C et al, Rapport annuel REIN 2014

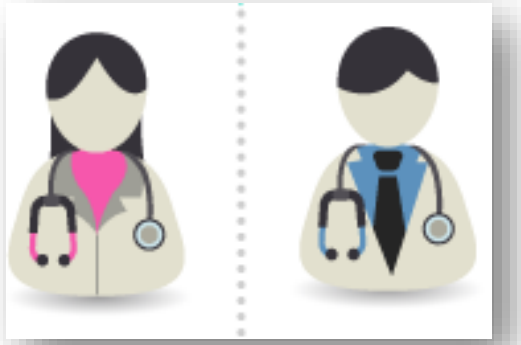
Démographie et profil des Néphrologues



http://www.profilmedecin.fr/contenu/chiffres-cles-nephrologue/

Ratio Patients Traités par Néphrologue en France

1522 Nephrologists



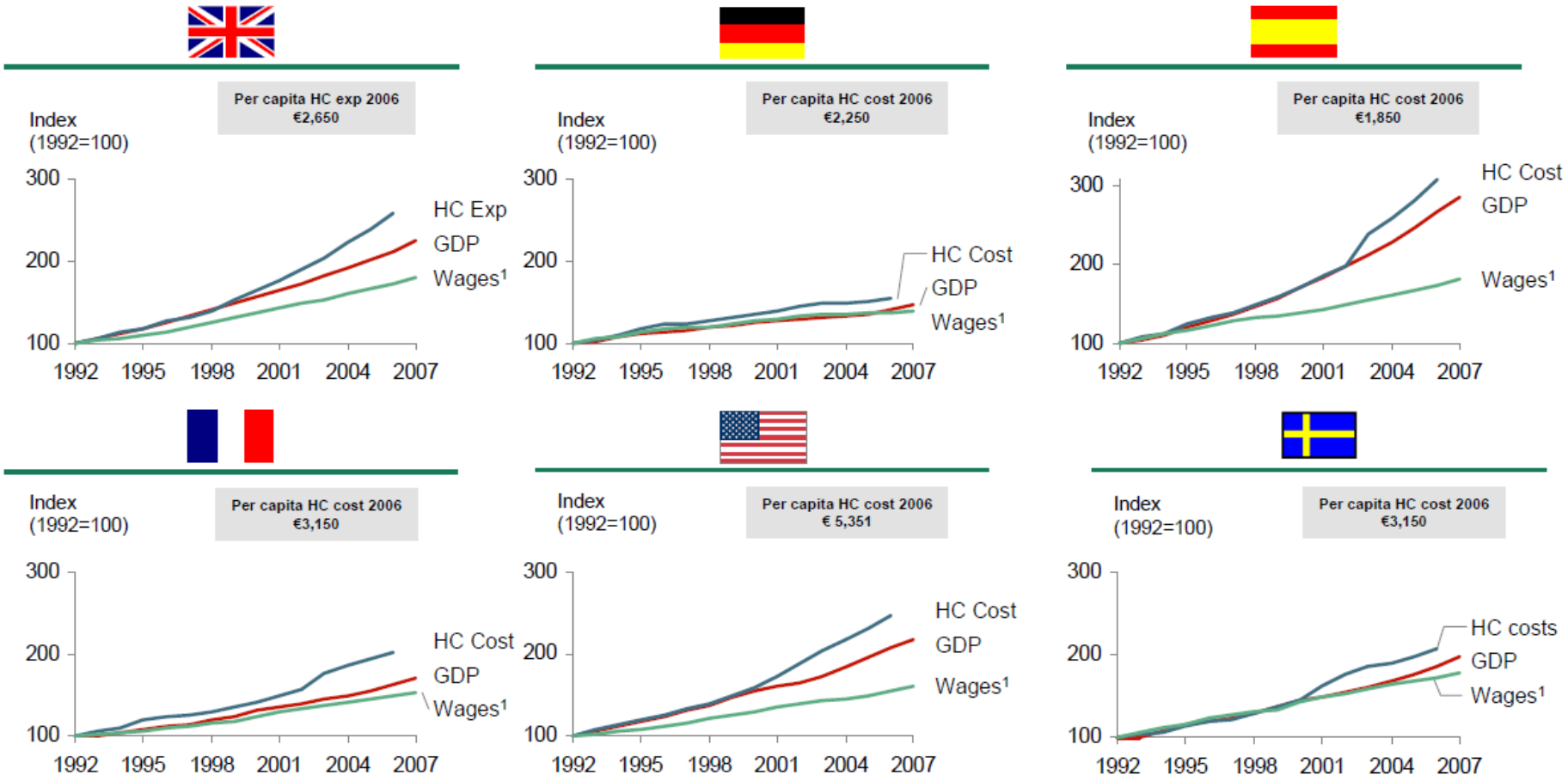
79355 ESKD-RRT

52 pat/Nep.

3.200.000 CKD3-4

2100 pat/Nep.

Augmentation anticipée et insoutenable du coût de la santé par pays



1. Average nominal wage index
Note: Index on basis of local currency; Per capita HC cost 2006 at exchange rate of 1 USD=0,797 €, 2005: 110,22 Yen/US$
Source: OECD Health Data 2008; EIU

Source : BCG Analysis

Valeur du traitement en matière de santé

Changement de paradigme: de la quantité à la qualité

The NEW ENGLAND JOURNAL of MEDICINE

Perspective

DECEMBER 23, 2010

What Is Value in Health Care?

Michael E. Porter, Ph.D.

In any field, improving performance and accountability depends on having a shared goal that unites the interests and activities of all stakeholders. In health care, however, stakeholders have myriad, often conflicting goals, including access to services, profitability, high quality, cost containment, safety, convenience, patient-centeredness, and satisfaction. Lack of clarity about goals has led to divergent approaches, gaming of the system, and slow progress in performance improvement.

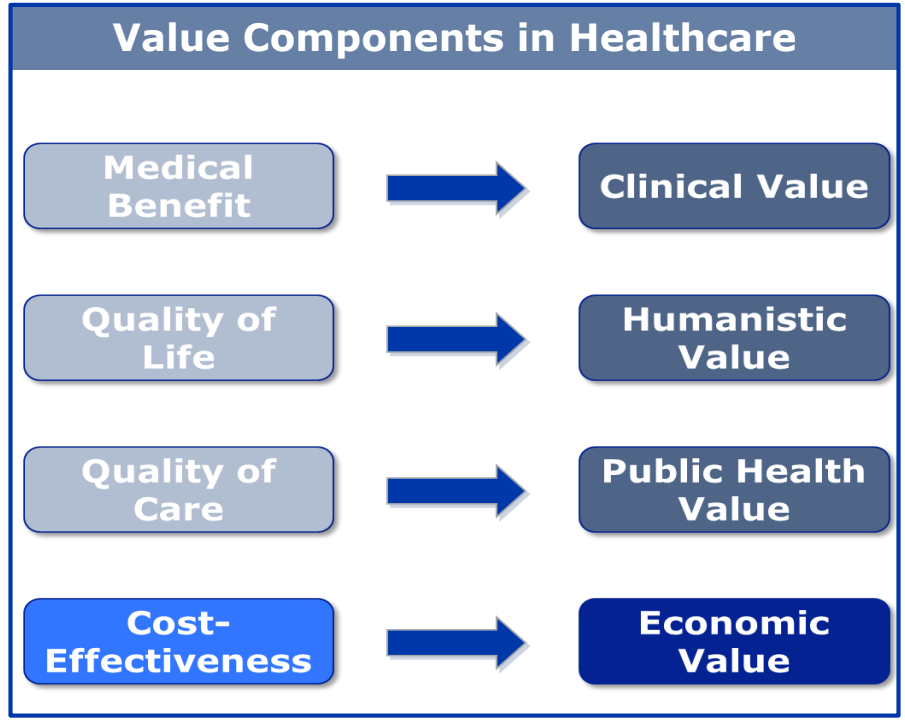
Achieving high value for patients must become the overarching goal of health care delivery, with value defined as the health outcomes achieved per dollar spent.[1] This goal is what matters for patients and unites the interests of all actors in the system. If value improves, patients, payers, providers, and suppliers can all benefit while the economic sustainability of the health care system increases.

Value — neither an abstract ideal nor a code word for cost reduction — should define the framework for performance improvement in health care. Rigorous, disciplined measurement and improvement of value is the best way to drive system progress. Yet value in health care remains largely unmeasured and misunderstood.

Value should always be defined around the customer, and in a well-functioning health care system, the creation of value for patients should determine the rewards for all other actors in the system. Since value depends on results, not inputs, value in health care is measured by the outcomes achieved, not the volume of services delivered, and shifting focus from volume to value is a central challenge. Nor is value measured by the process of care used; process measurement and improvement are important tactics but are no substitutes for measuring outcomes and costs.

Since value is defined as outcomes relative to costs, it encompasses efficiency. Cost reduction without regard to the outcomes achieved is dangerous and self-defeating, leading to false "savings" and potentially limiting effective care.

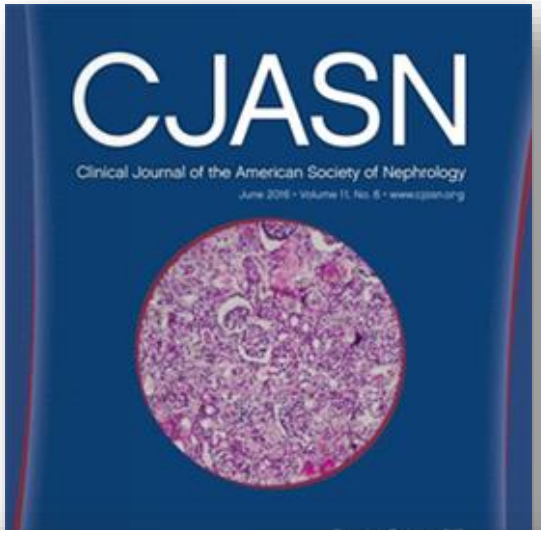
Outcomes, the numerator of the value equation, are inherently condition-specific and multidimensional. For any medical condition, no single outcome captures the results of care. Cost, the equation's denominator, refers to the total costs of the full cycle of care for the patient's medical condition, not the cost of individual services. To reduce cost, the best approach is often to spend more on some services to reduce the need for others.



$$\text{Value} = \frac{\text{Outcomes}}{\text{Cost}} = \frac{\text{Quality} + \text{Service}}{\text{Cost}}$$

Porter ME. *N Engl J Med* 2010;363;26:2477-2480

Appel aux indicateurs de performances et de qualité en dialyse



Quality Measures for Dialysis: Time for a Balanced Scorecard

Alan S. Kliger

Kliger AS. *Clin J Am Soc Nephrol* 2016; 11:363-368

Centres de dialyse Medicare et Medicaid aux USA
Dialysis Facility Compare Quality Measures: **Five-star Rating**

Clinical Performance Measures

1. Standardized hospitalization ratio
2. Standardized mortality ratio
3. Standardized transfusion ratio
4. Percentage of adult hemodialysis patients who had Kt/V urea ≥1.2
5. Percentage of pediatric hemodialysis patients who had Kt/V urea ≥1.2
6. Percentage of adult peritoneal dialysis patients who had weekly Kt/V urea ≥1.7
7. Percentage of adult dialysis patients who had an average calcium over the last 3 mo >10.2 mg/dl (Hypercalcemia)
8. Percentage of adult patients who received treatment through arteriovenous fistula
9. Percentage of adult patients who had a catheter left in a vein >90 d for their regular hemodialysis treatment

The star rating combines the three dialysis adequacy (Kt/V) measures (nos. 4–6) into a single all Kt/V measure.

Kliger AS. *Clin J Am Soc Nephrol* 2016; 11:363-368

Centres de dialyse Medicare et Medicaid aux USA

Quality Incentive Program for Payment Year 2018

Clinical Measures

1. Vascular access: AV fistula: percent of patient months using an autogenous AV fistula with two needles
2. Vascular access: catheter ≥ 90 d: percent of patient months with a catheter used continuously for ≥ 90 d
3. Dialysis adequacy: adult and pediatric hemodialysis: spKt/V urea ≥1.2
4. Dialysis adequacy: adult peritoneal dialysis: weekly Kt/V urea (dialysis + residual) ≥ 1.7
5. Dialysis adequacy: pediatric peritoneal dialysis: weekly Kt/V urea (dialysis + residual) ≥ 1.8
6. Hypercalcemia: proportion of patient months with 3-month rolling average of total uncorrected serum Ca ≥ 10.2 mg/dl
7. NHSN bloodstream infection: hemodialysis: number of HD outpatients with positive cultures per 100 HD patient months
8. Standardized readmission ratio: unplanned readmissions: observed/expected
9. Standardized transfusion ratio: RBC transfusion events (one or more units): observed/expected
10. Patient experience of care: ICH CAHPS Survey: percentage of patient responses to multiple testing tools

AV, arteriovenous; sp, single pool; Ca, calcium; NHSN, National Healthcare Safety Network; HD, hemodialysis; RBC, red blood cell; ICH, In-Center Hemodialysis; CAHPS, Consumer Assessment of Healthcare Providers and Systems; ESA, erythropoiesis stimulating agent; Hb, hemoglobin; Hct, hematocrit.

Kliger AS. *Clin J Am Soc Nephrol* 2016; 11:363-368

Centres de dialyse Medicare et Medicaid
Quality Incentive Program for Payment Year 2018

Reporting Measures

1. Mineral metabolism: number of months a facility reports serum phosphorus value for each Medicare patient
2. Anemia management: number of months a facility reports ESA dosage and Hb/Hct for each Medicare patient at least once per month
3. Pain assessment and follow-up
4. Clinical depression screen and follow-up
5. NHSN health care personnel influenza vaccination

AV, arteriovenous; sp, single pool; Ca, calcium; NHSN, National Healthcare Safety Network; HD, hemodialysis; RBC, red blood cell; ICH, In-Center Hemodialysis; CAHPS, Consumer Assessment of Healthcare Providers and Systems; ESA, erythropoiesis stimulating agent; Hb, hemoglobin; Hct, hematocrit.

Kliger AS. *Clin J Am Soc Nephrol* 2016; 11:363-368

Evaluation de la Qualité de la Prise en Charge des Patients Hémodialysés Chroniques

Contribuer à la régulation par la qualité et l'efficience

IPAQSS 2016 -

Indicateurs pour l'amélioration de la qualité et de la sécurité des soins

Prise en charge des patients hémodialysés chroniques

Résultats nationaux de la campagne 2015 – Données 2014 et 2015

Synthèse

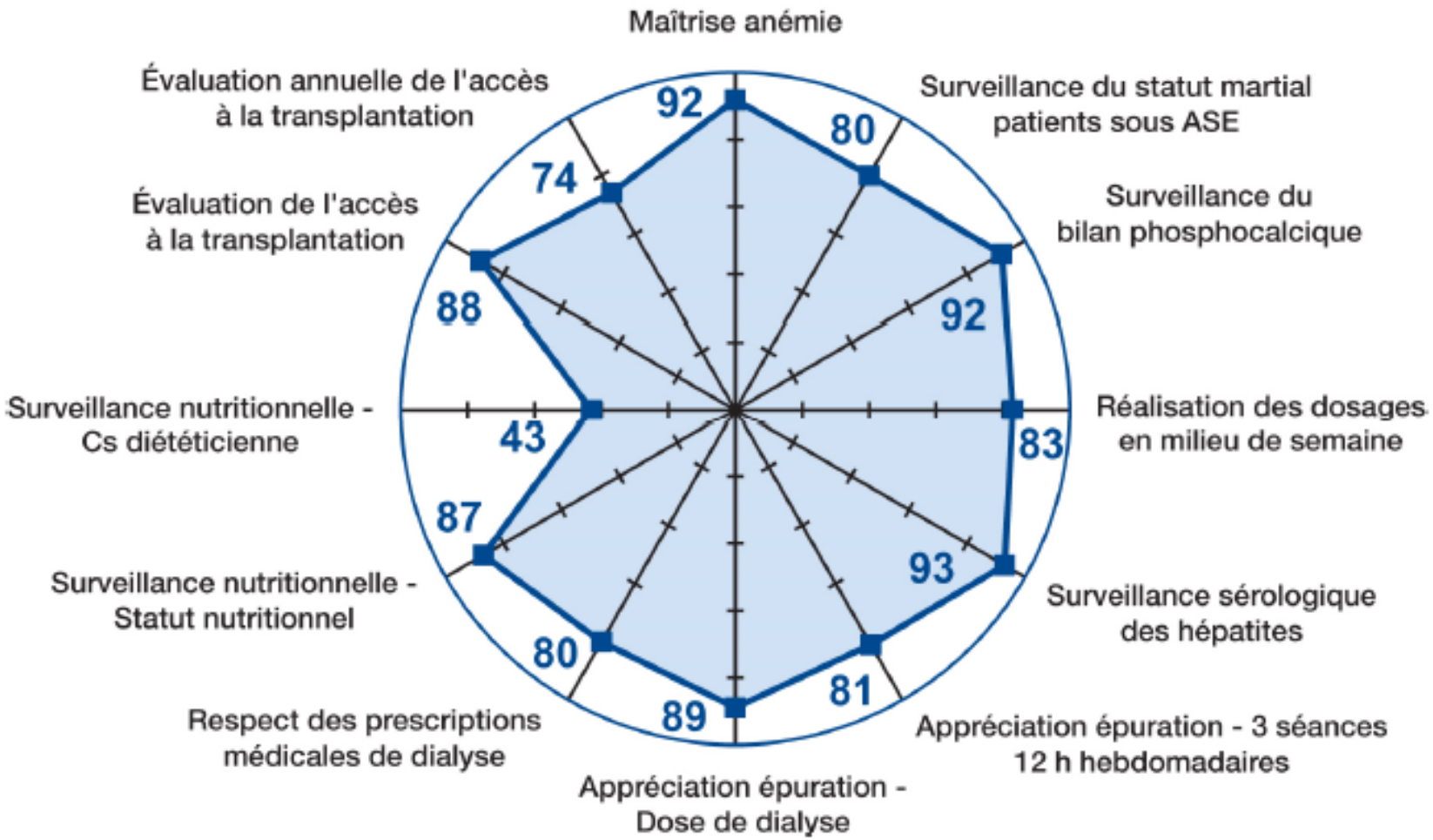
Novembre 2015

HAS
HAUTE AUTORITÉ DE SANTÉ

13 Indicateurs de Qualité en Dialyse

1. Maîtrise de l'anémie,
2. Surveillance du statut martial du patient traité par ASE,
3. Surveillance du bilan phosphocalcique,
4. Réalisation des dosages en milieu de semaine
5. Surveillance sérologique des hépatites,
6. Appréciation de l'épuration – Prescription de 3 séances et 12 heures hebdomadaires,
7. Appréciation de l'épuration – Mesure de la dose de dialyse
8. Respect des prescriptions médicales de dialyse,
9. Surveillance nutritionnelle – Statut nutritionnel,
10. Surveillance nutritionnelle – Consultation diététicienne,
11. Evaluation de l'accès à la transplantation,
12. Voie d'abord vasculaire – Fistule artério veineuse,
13. Voie d'abord vasculaire – Fistule artério veineuse native

Résultats Nationaux de la Campagne 2015



http://www.has-sante.fr/portail/plugins/ModuleXitiKLEE/types/FileDocument/doXiti.jsp?id=c_2573722

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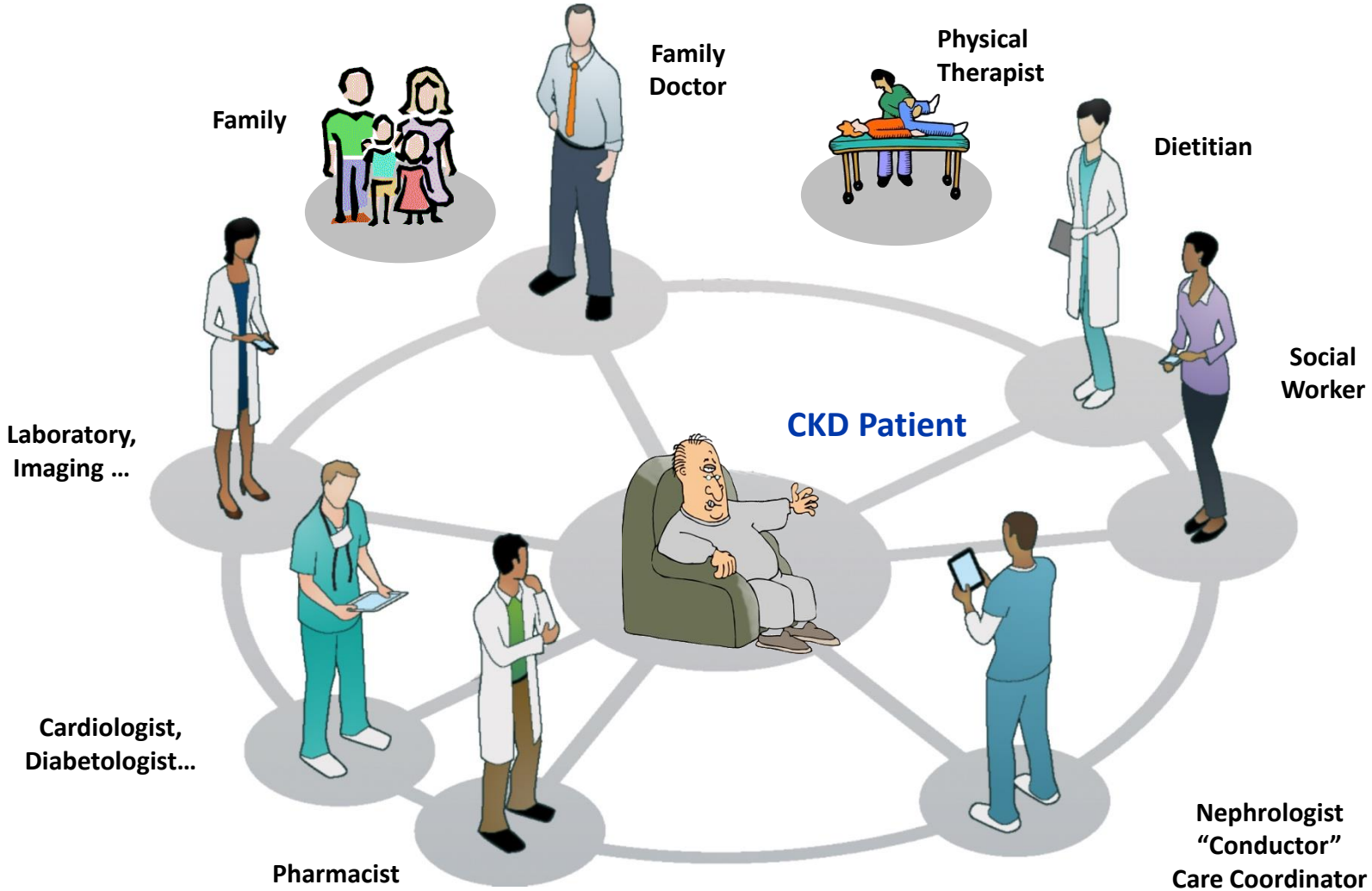
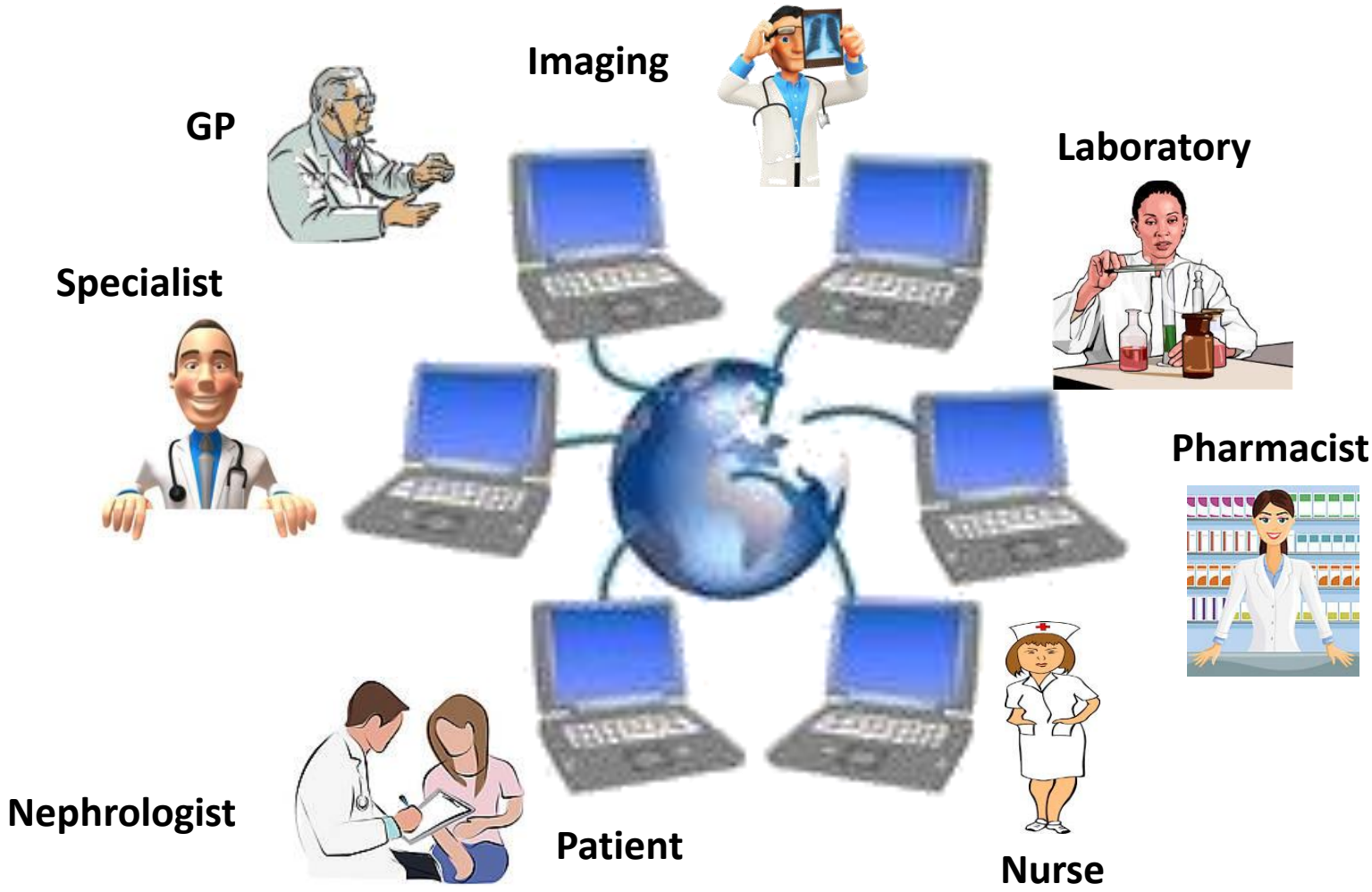
Activité centrée sur le soin personnalisé

Le patient rénal nécessite le support de multiples compétences



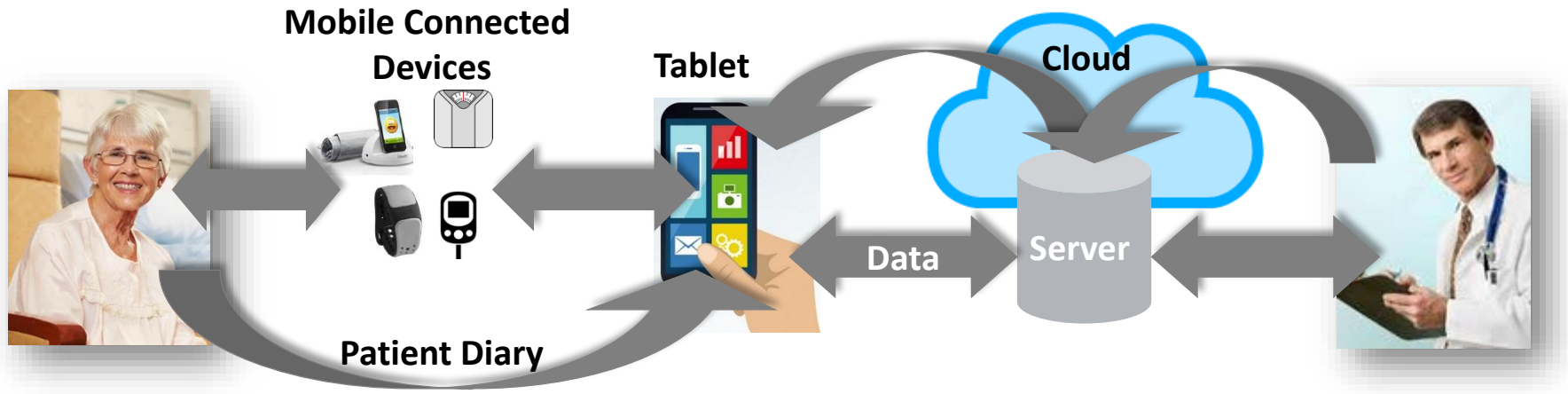
Dossier personnel médical partagé
Un dossier médical électronique est nécessaire



Surveillance à distance des patients rénaux

Outils personnels et connectés sont nécessaires

Surveillance et aide en ligne
Du concept à la réalisation pratique



- Monitoring device collects patient data
- Data is sent to mobile hub
- Data is automatically sent to server but can also be inspected on hub
- Data is processed on server and inspected by physician
- Custom Features can be built such as entering data into a patient diary on the hub
- Regime is determined by physician based on medical data analysis

Les méga-données: une révolution en santé

Center for US Health System Reform
Business Technology Office

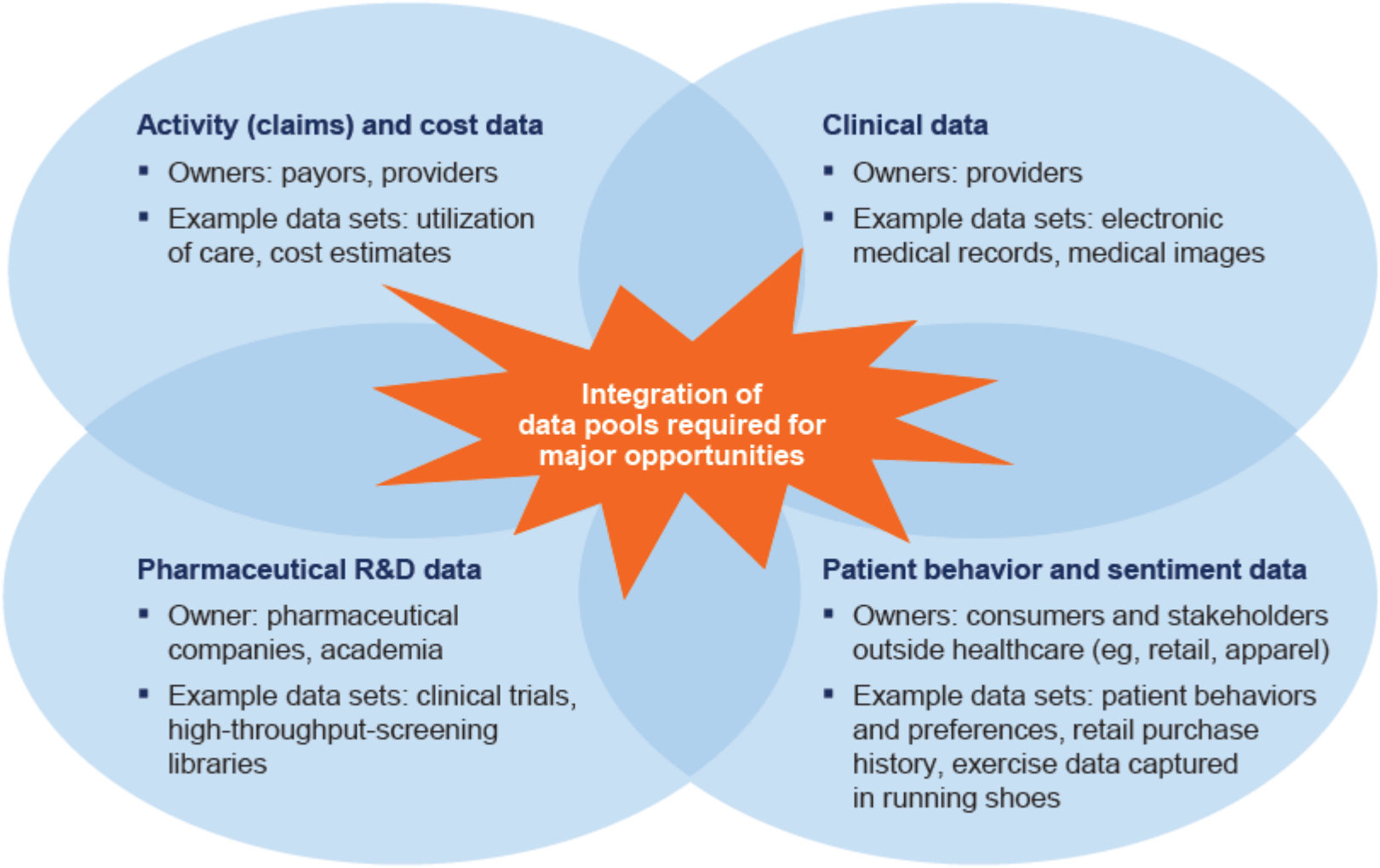
McKinsey&Company

The 'big data' revolution in healthcare

Accelerating value and innovation

Groves P et al, McKinsey & Company, January 2013

Les bases de données patients offrent des perspectives nouvelles en matière de soins



Groves P et al, McKinsey & Company, January 2013

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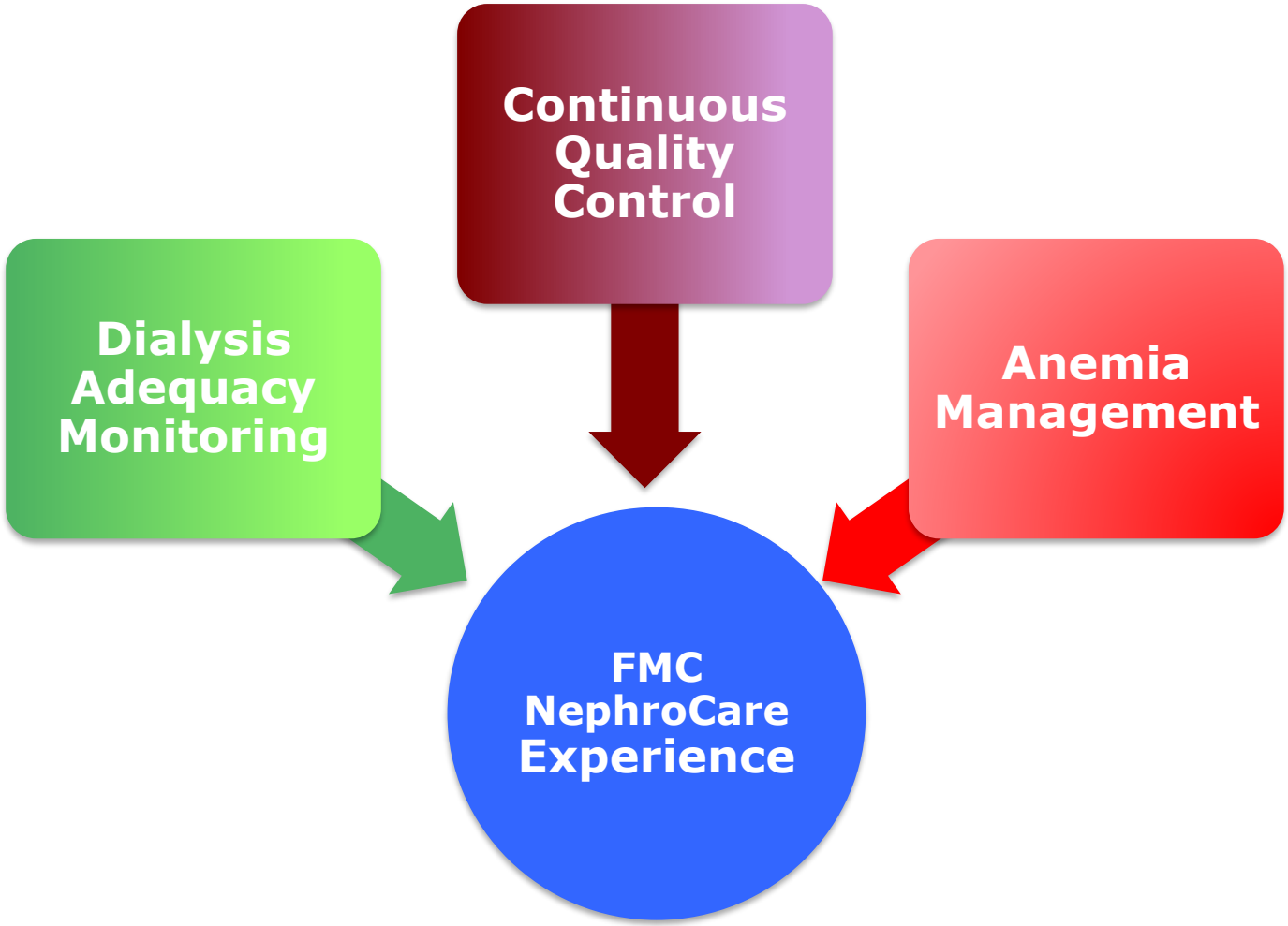
Exemples développés et utilisés par un acteur majeur de soins rénaux



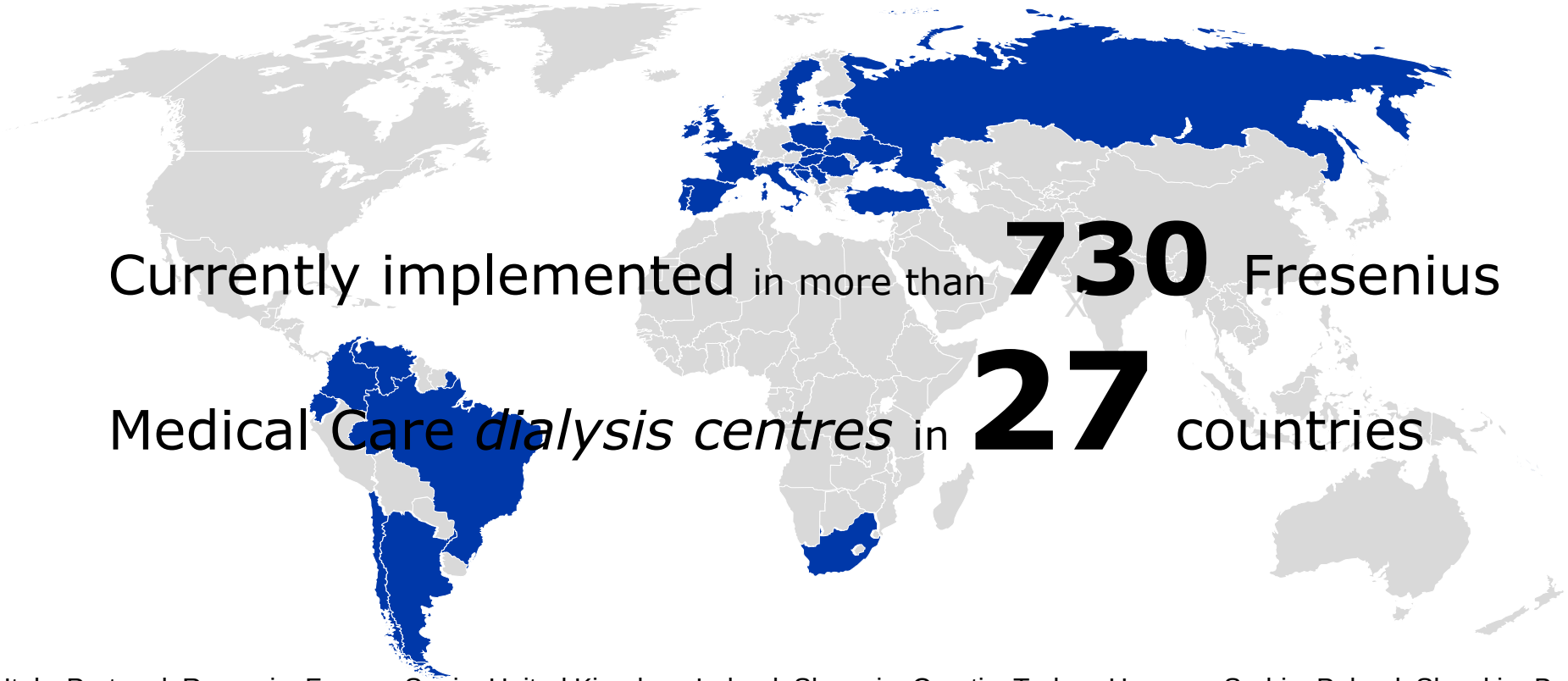
EuCliD® Base de données spécifique

Plateforme pour l'amélioration de la qualité des soins

Clinic **International Network**

EuCliD: European Clinical Database (FME)

EuCliD® dans le monde



Currently implemented in more than **730** Fresenius

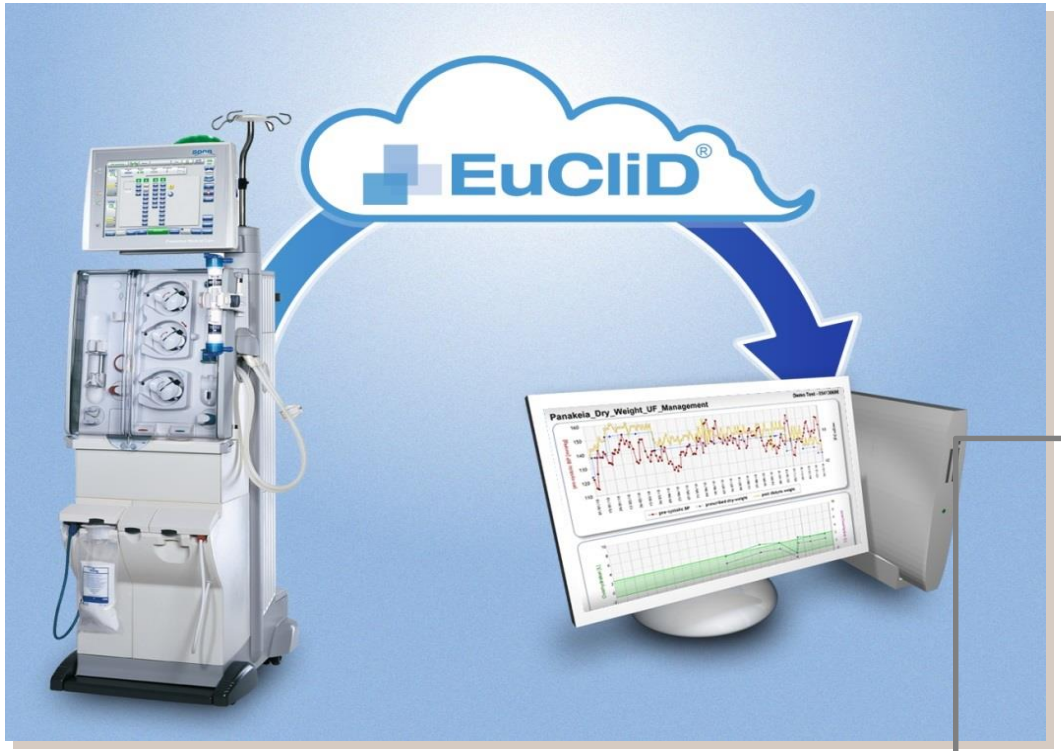
Medical Care *dialysis centres* in **27** countries

Italy, Portugal, Romania, France, Spain, United Kingdom, Ireland, Slovenia, Croatia, Turkey, Hungary, Serbia, Poland, Slovakia, Bosnia and Herzegovina, Sweden, Czech Republic, Ukraine, Estonia, Russia, South Africa,
Brasil, Chile, Colombia, Argentina, Venezuela, Ecuador.

EuCliD® en nombres

- More than 75.000 active patients (HD and PD)
- More than 15.000 active users (2.500 are concurrent)
- More than 45 millions treatments collected
- More than 7.5 millions lab tests collected
- 3.5 TB total transactional data collected

Des données individuelles acquises en dialyse, au suivi en temps réel de la qualité des soins



Dynamic Online Report Generation

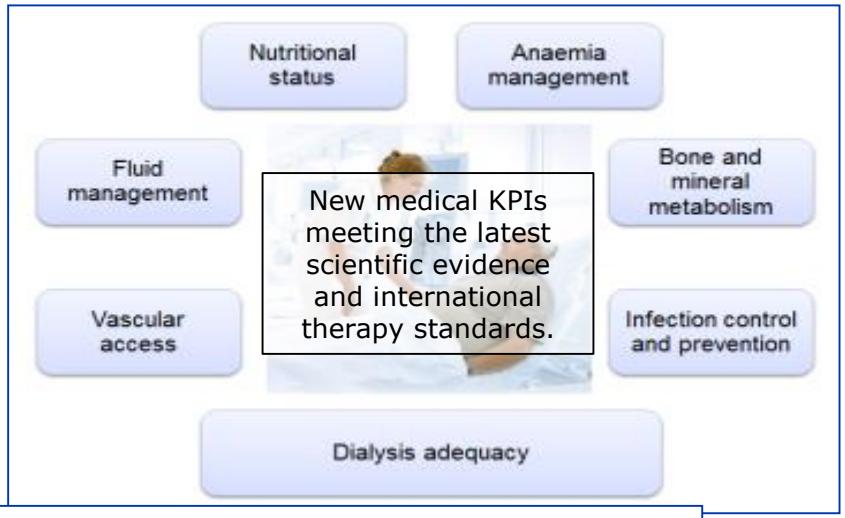
Qualité du traitement et résultats
Mesure des principaux indicateurs de soins délivrés

Patient Perspective KPIs Addressing Main Clinical Challenges

Objective	KPI	Yellow*	Green*	Targets
Improve dialysis process	Effective Weekly Treatment Time Score	80%	90%	For 2012 as 1st year of working with new medical KPIs: see next slide
	Infusion or Blood Volume Score	80%	90%	
	Single-pool Kt/V Score	80%	90%	
	Vascular Access Score	80%	90%	
	Hydration Status Score	80%	90%	
	Hepatitis B Vaccination Score	80%	90%	For 2013 and following years: 90th percentile of actual values at e of previous year from all clinics of country**
Improve dialysis outcomes	Albumin Score	80%	90%	
	Haemoglobin Score	80%	90%	
	Phosphate Score	80%	90%	
	Bacteraemia or Peritonitis Score	80%	90%	

* Represents percentage of target achievement needed to get traffic light
** Modifiable by country management within strict rules

NB: KPIs were selected to have proven relationship to mortality/morbidity and to be at least partly under our control



Patient care outcomes at the forefront

% of patients	U.S. Q4 2011	U.S. Q4 2012	EMEA Q4 2011	EMEA Q4 2012	Asia-Pacific Q4 2011	Asia-Pacific Q4 2012
Kt/V ≥ 1.2	97	97	95	97	97	97
No catheter (>90 days)	82	82	84	85	96	94
Hemoglobin = 10 – 12 g/dl	78	75	57	58	58	59
Hemoglobin = 10 – 13 g/dl (International)	88	82	78	78	66	67
Albumin ≥ 3.5 g/dl	85	85	88	86	90	89
Phosphate ≤ 5.5 mg/dl	64	66	76	79	73	71
Calcium 8.4 – 10.2 mg/dl	81	84	78	78	76	75
Hospitalization days, per patient	9.8	9.8	9.3	9.3	5.2	4.6

Cadre stratégique et institutionnel
FME Balanced Scorecard et assurance qualité

Patient

Community | Strategy MAP | Print

n Slicer | Unit Clinics: EMEALA | Modalities: All | Time Standard: 2011

Objective	KPI	Previous	Current	Target	Weight	Status	Trend
		73,6%	74,0%		40%		
Increase life expectancy (HD only)		77,9%	79,6%		70%		
	High Flux Dialysis (incl. HDF)	98,8%	98,9%	100,0%	8%		
	HDF Online Dialysis	49,2%	51,3%	100,0%	8%		
	eKt/V >= 1,0 / 1,2 / 1,7	82,5%	83,5%	100,0%	8%		
	Hgb >= 10, <= 13 g/dL	84,5%	84,4%	100,0%	8%		
	Vascular access (native fistula)	74,4%	73,9%	100,0%	8%		
	Treatment Adequacy	90,1%	90,8%	100,0%	8%		
	Peritonitis Rate (PD Only)	-	-	36,0	8%		
	Reporting Compliance	86,9%	88,7%	100,0%	44%		
Improve quality of life (HD only)		63,5%	61,0%		30%		
	Patient Satisfaction Survey	1,7	1,8	2,6	40%		
	Patients at risk for HepB infectio	58,5%	54,0%	0,0%	30%		
	Seroconversion HepB-C	0,6%	0,6%	0,0%	30%		

Employees

Community | Strategy MAP | Print

ion Slicer | Unit Clinics: EMEALA | Modalities: All | Time Standard: 2011

Objective	KPI	Previous	Current	Target	Weight	Status	Trend
		91,6%	87,9%		20%		
Bind qualified employees		90,1%	85,7%		85%		
	Turnover of Personnel	11,9%	11,7%	11,1%	40%		
	Absenteeism	2,9%	2,9%	3,7%	20%		
	Overtime	2,6%	2,5%	3,8%	20%		
	Employee Satisfaction Survey	4,0	4,0	4,3	20%		
Promote their professional developmen		100,0%	100,0%		15%		
	Training hours	23,5	22,5	17,7	100%		

Community

Patients | Employees | Shareholders | Community | Strategy MAP

ion Slicer | Unit Clinics: EMEALA | Modalities: All | Time Standard: 2011

Objective	KPI	Previous	Current	Target	Weight	Status	Trend
		78,0%	79,4%		20%		
Justify our social responsabilities		52,0%	57,0%		20%		
	Accidents to employees (per 1.000)	16,9	15,9	0,0	60%		
	Patient education and support program	73,8%	84,6%	100,0%	40%		
Comply with standards & legal requirement		74,2%	73,8%		40%		
	ISO 9001 and equivalent	77,2%	77,4%	100,0%	50%		
	ISO 14001 Certification	60,5%	60,4%	100,0%	25%		
	Compliance program	84,6%	83,1%	100,0%	25%		
ECO Performance		94,9%	96,3%		40%		
	Contaminated waste, kg per treatment	1,1	1,0	1,1	30%		
	Electricity consumption, kwh per treatm	10,8	11,0	10,4	30%		
	Water consumption, liter per treatment	397,1	393,4	380,3	40%		

Shareholders

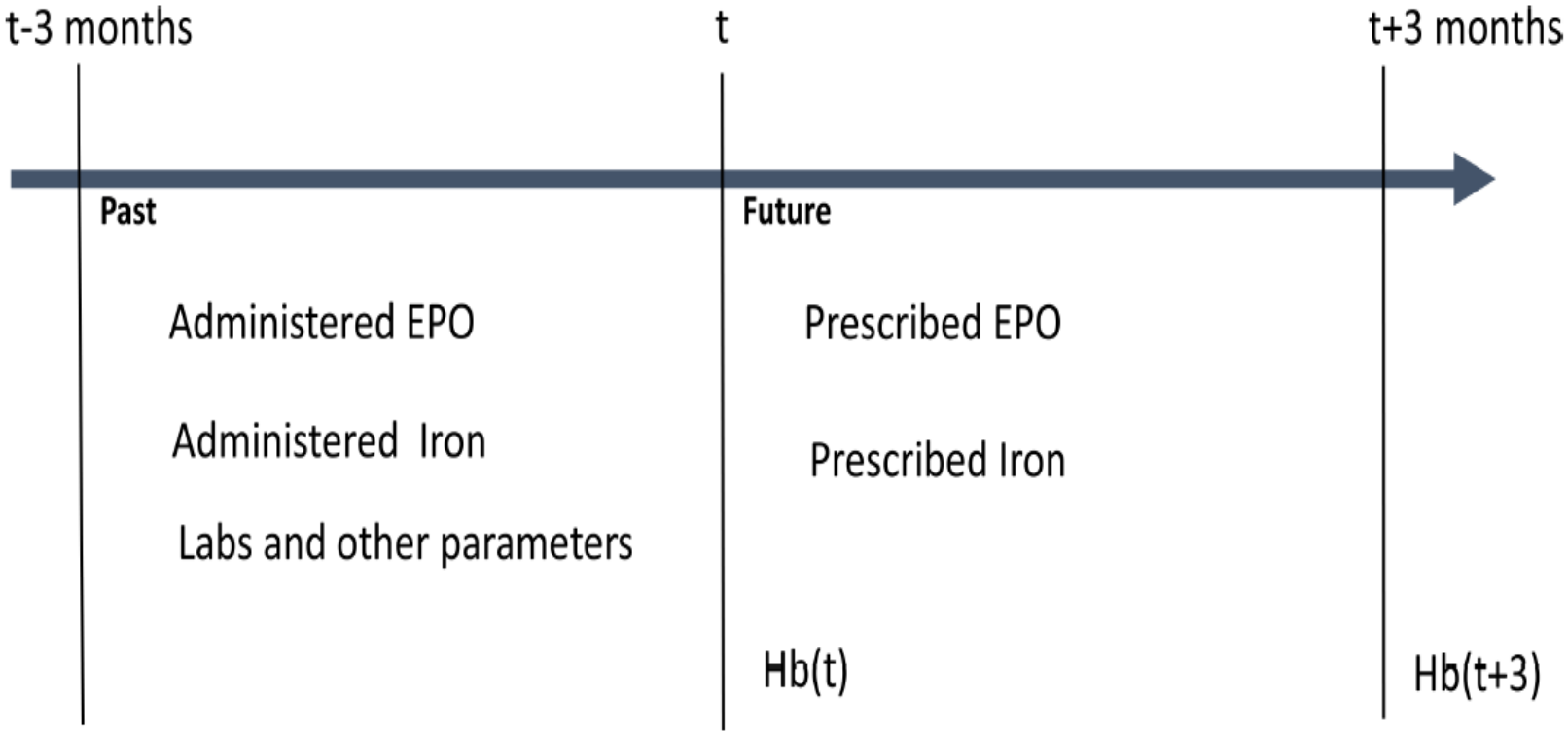
C | Patients | Employees | Shareholders | Community | Strategy MAP

ion Slicer | Unit Clinics: EMEALA | Modalities: All | Time Standard: 2011

Objective	KPI	Previous	Current	Target	Weight	Status	Trend
		81,8%	86,7%		20%		
Continuous development		71,9%	97,3%		40%		
	Treatment growth	11,7%	12,3%	12,6%	25%		
	Patient Growth	15,5%	11,2%	11,6%	25%		
	New Patient inflow	33,4%	33,0%	32,4%	50%		
Attractive returns for shareholders		88,4%	79,6%		60%		
	Scheduling Efficiency	91,3%	90,3%	100,0%	40%		
	Personnel costs	99,0%	98,7%	100,0%	30%		
	Other costs	97,2%	99,8%	98,2%	30%		

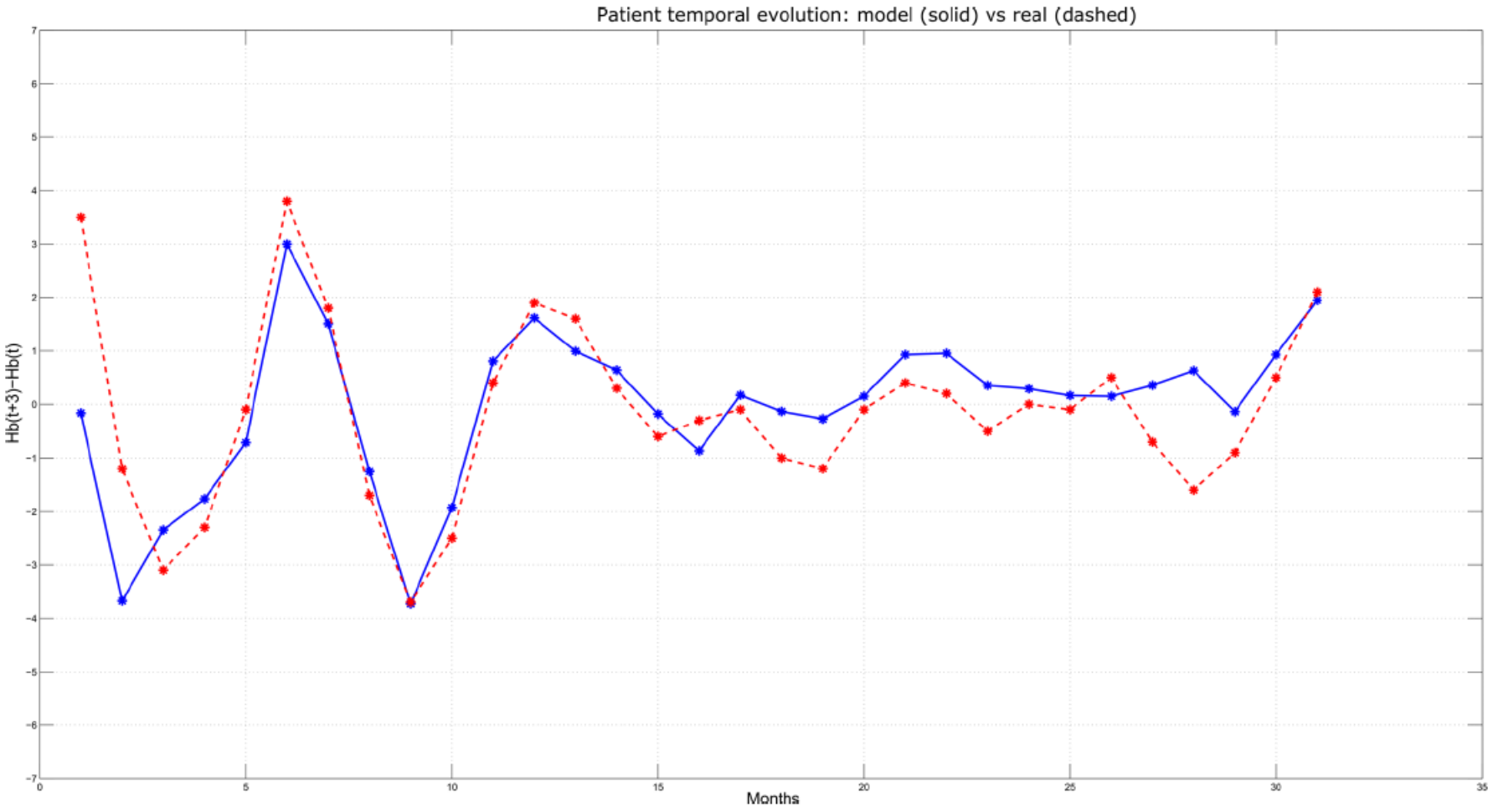
BSC as instrument for country/clinic mgt. to continuously improve performance as expected by our patients, employees, shareholders and the whole community incl. health care authorities

Développement d'un programme de support médical à la gestion de l'anémie par intelligence artificielle



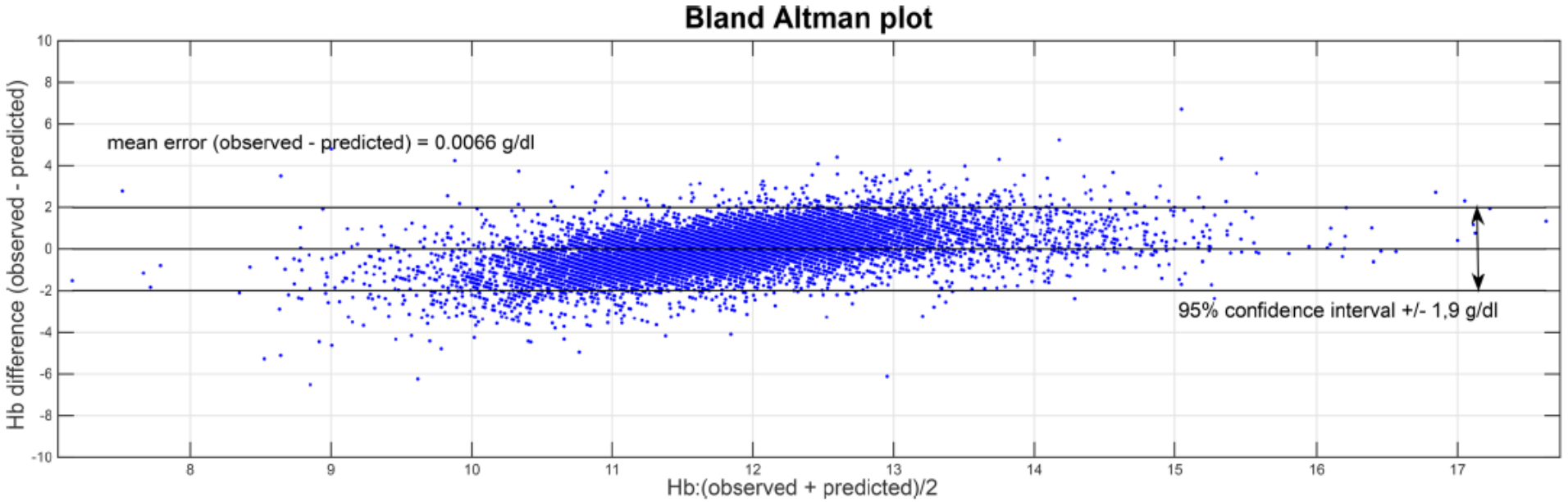
Barbieri C et al. *PLoS ONE* 2016; 11(3): e0148938

Prédictions des taux d'Hb à trois mois
Comparaison des valeurs prédites et mesurées



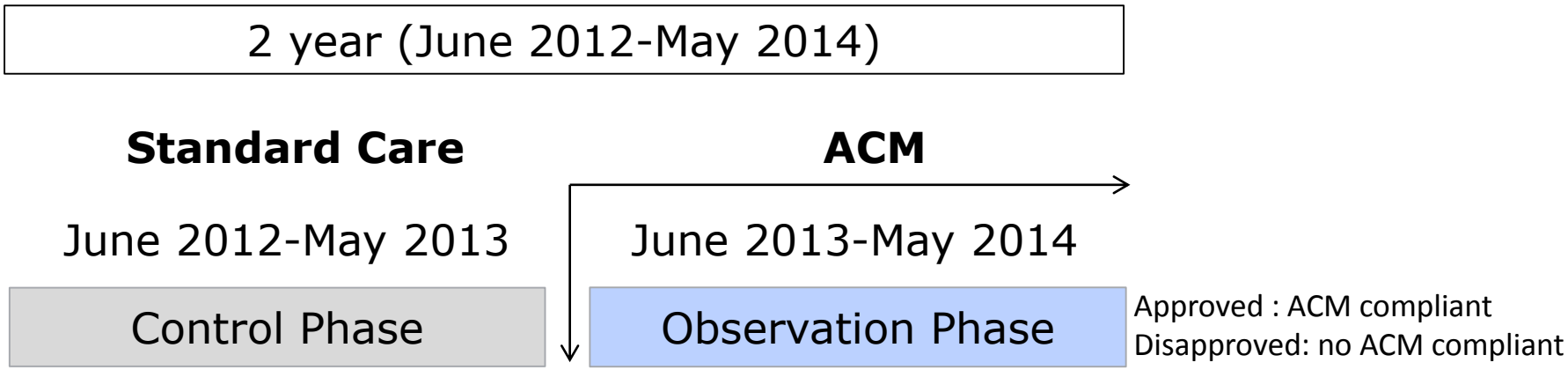
Barbieri C et al. *PLoS ONE* 2016; 11(3): e0148938

Comparaison des valeurs d'Hb mesurées par rapport à celles prédites



Barbieri C et al. *PLoS ONE* 2016; 11(3): e0148938

Validation prospective multicentrique et internationale d'un modèle d'assistance au traitement de l'anémie



NephroCare Clinics:
Motol Prague, Czech Rep.
Cartagena & San Pedro, Spain
Lumiar, Portugal

ERBP Guidelines
Hb, TSAT, Ferritin
Darbepoetin alfa, Venofer/Ferinject

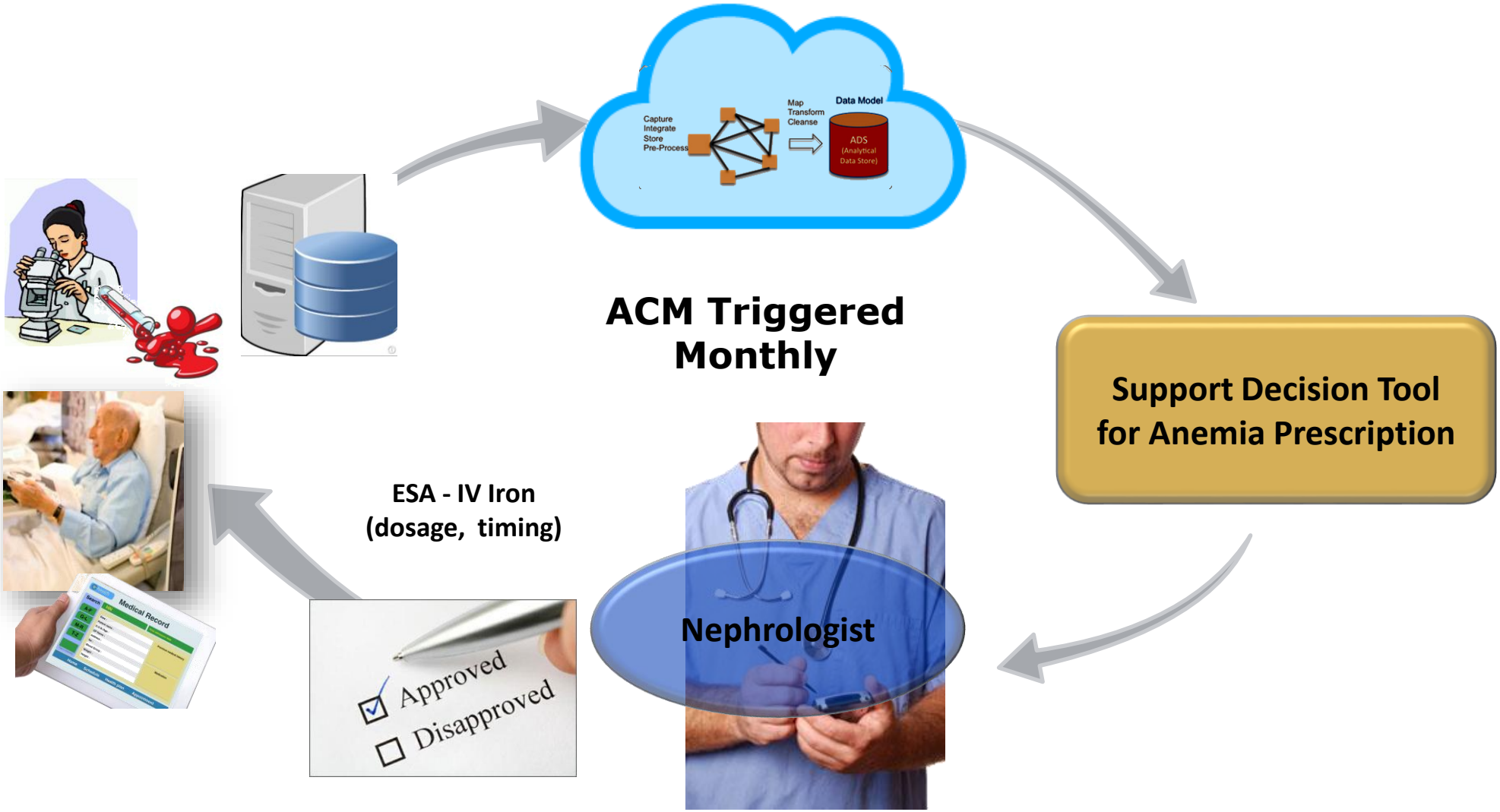
Analyses : Patient Level
Facility Level

ACM, Anemia Control Model

Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

Anemia Control Model, Boucle de contrôle

Intelligence artificielle, Algorithme, Proposition



Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

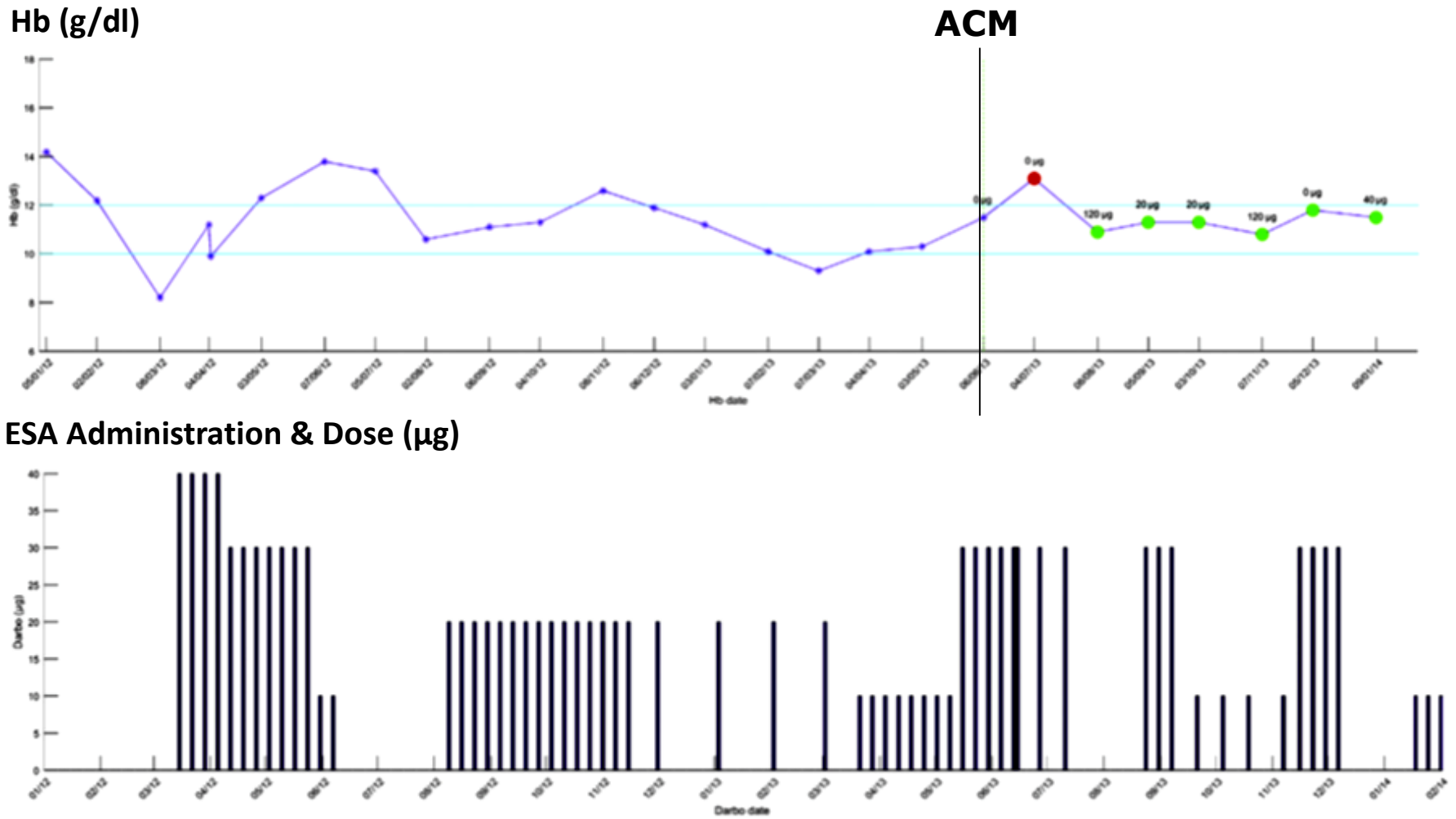
Caractéristiques de la population

Characteristics	All patients	ACM-compliant patients
No. of patients	383	313
Follow-up period, mo, mean ± SD	22.12 ± 2.40	22.06 ± 2.50
Age, yr, mean ± SD	65.18 ± 14.89	65.23 ± 14.83
Male, no. (%)	231 (60.3)	193 (61.7)
Comorbidities at ACM entrance, no. (%)		
Coronary artery disease	33 (8.6)	24 (7.7)
Congestive heart failure	82 (21.4)	69 (22.0)
Peripheral vascular disease	114 (29.8)	87 (27.8)
Cerebrovascular disease	71 (18.5)	56 (17.9)
Chronic pulmonary disease	58 (15.1)	49 (15.7)
Diabetes	87 (22.7)	83 (26.5)
Charlson Comorbidity Index, mean ± SD	6.98 ± 3.30	6.86 ± 3.26
Causes of kidney disease, no. (%)		
Diabetes	75 (19.6)	60 (19.2)
Hypertension	69 (18.0)	62 (19.8)
Chronic glomerulonephritis	88 (23.0)	63 (20.1)
Urinary obstruction/chronic interstitial nephritis	10 (2.6)	6 (1.9)
Polycystic kidney disease	25 (6.5)	23 (7.4)
Other	116 (30.3)	99 (31.6)
Vascular access, no. (%):		
Fistula	261 (68.1)	219 (70.0)
Catheter	59 (15.4)	48 (15.3)
Graft	63 (17.2)	46 (14.7)
Treatment modality, no. (%)		
HDF online	361 (94.3)	296 (94.6)
High-flux HD	14 (3.7)	9 (2.9)
Other	7 (1.8)	8 (2.6)

ACM, Anemia Control Model; HD, hemodialysis; HDF, hemodiafiltration.

Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

Evolution des taux d'Hb chez un patient typique



ESA: Darbepoetin alfa Accepted suggestion Rejected suggestion

Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

Résultats obtenus dans la population globale

	Control phase	Observation phase	*P*-value
All patients (*N* = 383)			
Anemia outcomes			
Hb SD, g/dl, mean ± SD	0.95 ± 0.41	0.83 ± 0.33	<0.001[a]
Patients with >66.6% Hb within target range, no. (%)	247 (64.5)	322 (84.1)	<0.001[b]
Median darbepoetin doses, µg, median (IQR)	40.00 (68.75)	30.00 (70.00)	<0.001[c]
Median absolute delta darbepoetin doses,[e] µg, median (IQR)	10.00 (25.00)	20.00 (40.00)	0.03[c]
Adverse events			
Patients with cardiovascular events, no. (%)	82 (21.5)	54 (14.1)	0.01[b]
Cardiovascular events (incidence/ 1000 patient-years)	296.73	248.91	0.11[d]
Hospitalization days (incidence/ 1000 patient-years)	3488.63	3768.45	0.006[d]
Patients with transfusion events, no. (%)	9 (2.3)	3 (0.8)	0.14[b]
Transfusion events (incidence/ 1000 patient-years)	55.46	8.68	<0.001[d]

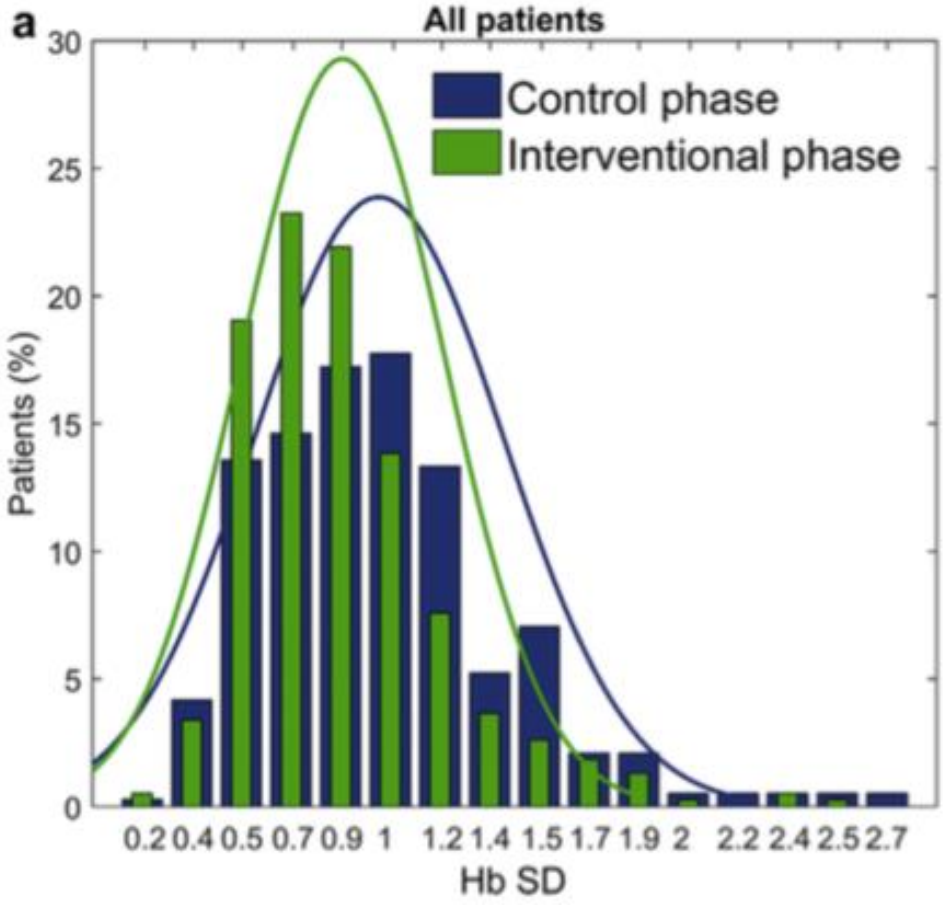
Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

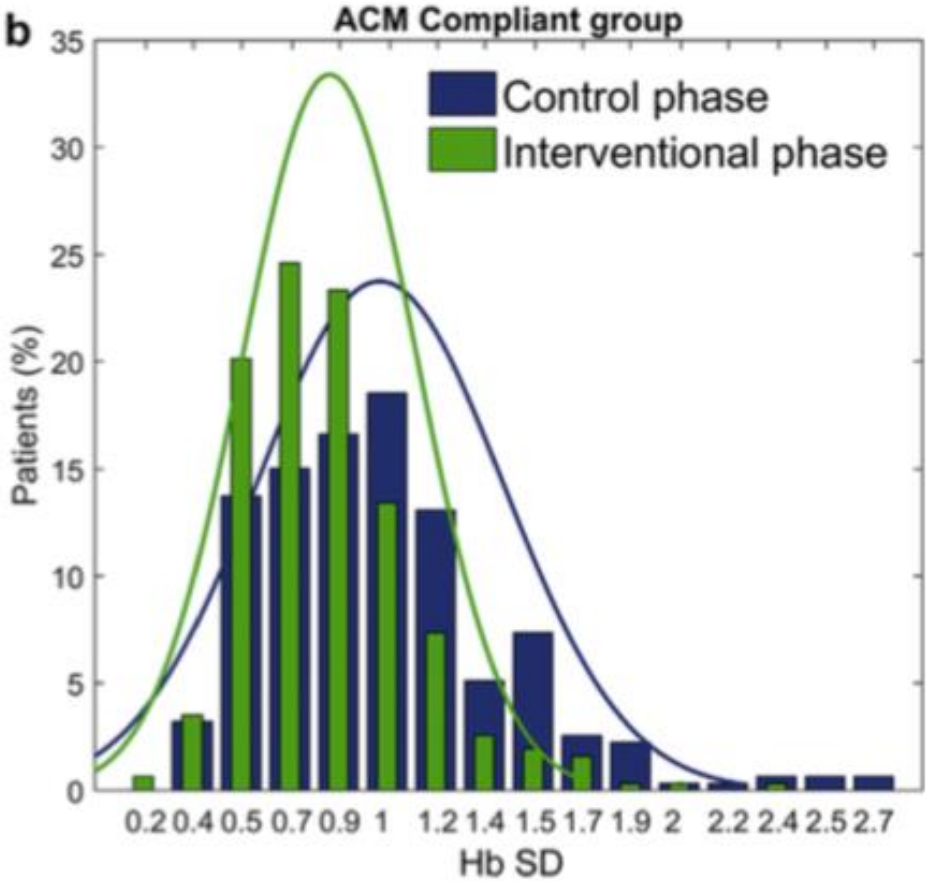
Résultats obtenus dans la population pilotée par ACM (>80% acceptation)

	Control phase	Observation phase	*P*-value
ACM-compliant patients (n = 313)			
Anemia outcomes			
Hb SD, g/dl, mean ± SD	0.97 ± 0.41	0.80 ± 0.29	<0.001[a]
Patients with >66.6% Hb within target range, no. (%)	204 (65.2)	280 (89.5)	<0.001[b]
Median darbepoetin dose, µg, median (IQR)	40.00 (80.00)	20.00 (70.00)	0.001[c]
Median absolute delta darbepoetin dose, µg, median (IQR)	10.00 (25.00)	10.00 (40.00)	0.24[c]
Adverse events			
Patients with cardiovascular events, no. (%)	64 (20.4)	39 (12.5)	0.009[b]
Cardiovascular events (incidence/ 1000 patient-years)	276.36	191.15	0.002[d]
Hospitalization days (incidence/ 1000 patient-years)	3319.69	3348.67	0.42[d]
Patients with transfusion events, no. (%)	7 (2.2)	0 (0)	0.02[b]
Transfusion events (incidence/ 1000 patient-years)	54.59	0	<0.001[d]

Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

Variations des taux Hb Variations (SD) avant et aprés utilisation de l'ACM





Barbieri C et al, *Kidney Int.* 2016; ePub June 2016

Plan

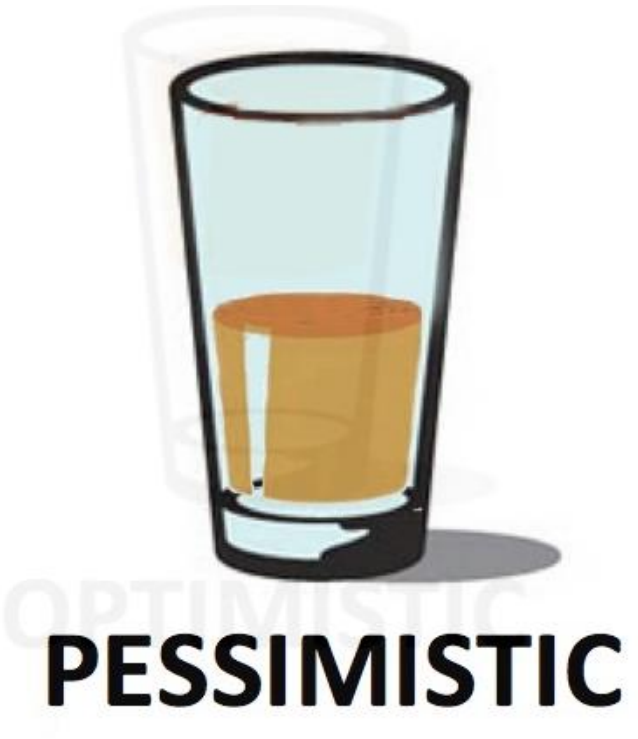
1. **Défis actuels et à venir du traitement de l'insuffisance rénale chronique.** Un problème aux multiples facettes
2. **Solutions apportées par les outils d'information, de communication et d'analyse.** Un support à la prise de décision
3. **Expérience d'un gros opérateur de soins rénaux**
   Exemples concrets: Balance score card, Traitement de l'anémie
4. **Message final**
   Les outils d'information, de communication et d'analyse, le futur du traitement de la maladie rénale

Message final -1-

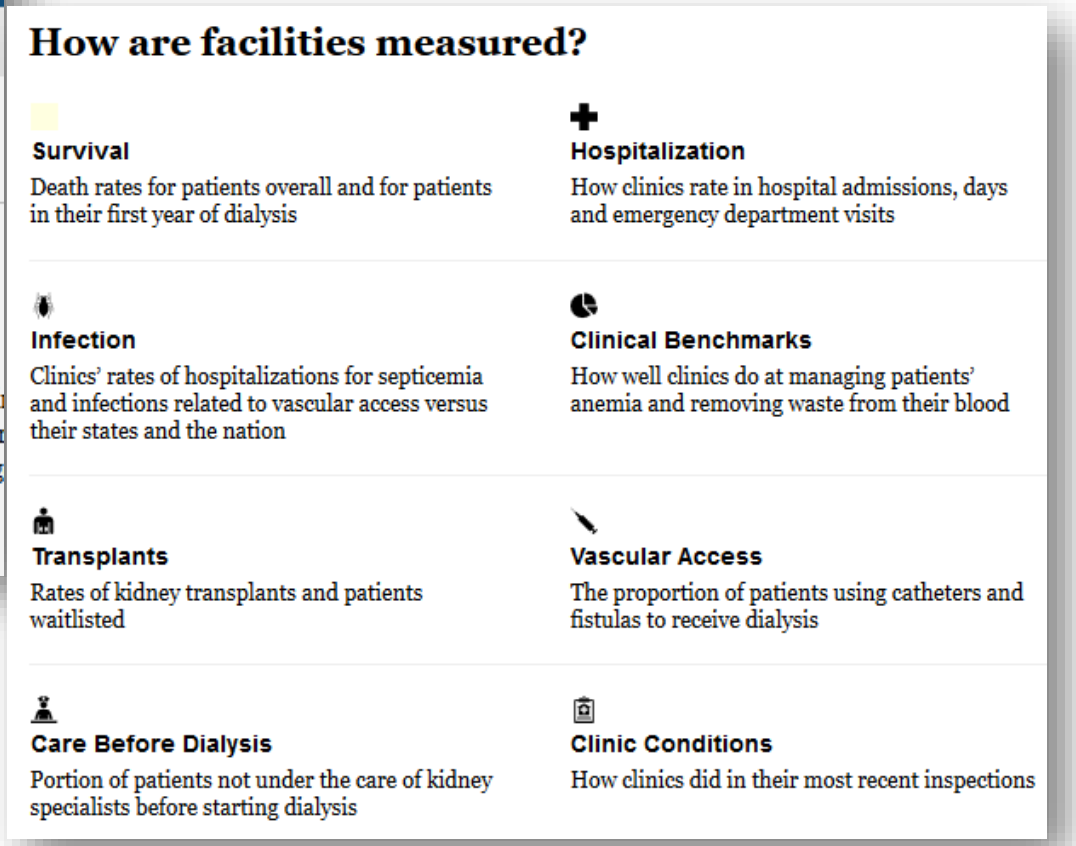
- Les outils d'information et de communication, et d'analyse des méga-données sont indispensables et représentent le **futur du traitement de l'insuffisance rénale chronique**
- **Les TIC** offrent des outils puissants et fiables adaptés
  - Soins personnalisés
  - Dossier médical digital partagé
  - Réseau virtuel de spécialistes multiples
  - Surveillance et amélioration de la qualité des soins
- **L'analyse des méga-données** ouvre de nouvelles perspectives
  - Médecine personnalisée et plus précise
  - Médecine prédictive
  - Médecine coût-efficace

Message final -2-

- Les **TICs** et **l'analyse des méga-données** ouvrent la voie à de **nouveaux problèmes**
  - Industrialisation de la médecine
  - Transparence de la consommation et du coût réel des soins
  - Comparaison d'efficacité et de qualité des structures de soins
  - Information à caractère public et médiatique
  - Politique de santé dirigée par les opérateurs de soins, industriels, assurances, mutuelles, investisseurs …



Un exemple: Dialysis Benchmarking in US Today



http://projects.propublica.org/dialysis/

Exemple d'un centre de dialyse…

Dialysis Facility Tracker »

NEW YORK - PRESBYTERIAN HOSPITAL - COLUMBIA, New York, N.Y.

COMPARE TO FOUR NEAREST

	This Facility	State Average	National Average
Details	**(212) 305-3394** 622 WEST 168TH STREET DIALYSIS - PH 4 CENTER, 430 NEW YORK, N.Y. 10032 map »		
Stations	**10**		
Survival			
Mortality Deaths per 100 patient years, 2008-2011.	**17**	**19**	**19**
Mortality vs. Expected Patient death rate versus expected death rate, 2008-2011.			
First Year Mortality Deaths during first year of treatment per 100 patient years, 2008-2010.	**0**	**26**	**26**
First Year Mortality vs. Expected First year death rate versus expected death rate, 2008-2010.			
Hospitalization			
Hospital Admissions Hospital admissions versus expected	**14%** higher than expected		
Days in Hospital Days in hospital versus expected days in hospital, 2008-2011.	**8%** lower than expected		
Emergency room visits vs. Expected Emergency room visit rate vs. expected, 2008-2011	**15%** lower than expected		
Infection			
Septicemia Percent hospitalized with a blood infection, 2008-2011.	**4%**	**13%**	**11%**
Access-Related Infections Percent with vascular access infection, 2011.	**33%**	**14%**	**17%**
Clinical Benchmarks			
Anemia Control Percent of patients with healthy hemoglobin levels, 2011.	**88%**	**90%**	**93%**
Dialysis Adequacy Percent of patients with adequate urea removal, 2011.	**100%**	**97%**	**97%**

http://projects.propublica.org/dialysis/