

Shifting the paradigm of Diaverum Portugal's renal care services Towards integrated dialysis care

Department of Health Policy
April 2020



- slide 4 → **Context**
- slide 8 → **Challenges & Objectives**
- slide 10 → **Policy Response**
- slide 15 → **Data Analysis**
- slide 27 → **Key Takeaways**

Before 2008, private dialysis providers in Portugal were reimbursed on a fee-for-service basis with a fixed EUR amount per treatment performed. The public sector was responsible for vascular access, medication and laboratory services.

In 2008, the healthcare authorities wanted a higher degree of financial predictability and cost containment. In a joint agreement, a capitated reimbursement model was introduced, in which the private providers were paid a fixed fee per patient week, including responsibility for medication management and laboratory services. Medical outcome KPIs were introduced to monitor the performance. This was followed in 2011 by the inclusion of vascular access responsibility to the bundled service offering.

In 2014, Diaverum added Patient Care Coordination (PCC) to its bundled dialysis service, as an initiative to better control the overall health status of its patients – introducing its **integrated dialysis care concept**.

This evolution from standard dialysis care to **integrated dialysis care** has brought tangible benefits for all stakeholders:

Healthcare authorities: capitated reimbursement model allows to lower total cost of care, improve predictability of financial planning, simplify administration, clearer supervision of private providers, with increased medical KPI outcomes.

Patients: improved medical outcomes, simplification of care coordination, and as a result gradually improved overall patient satisfaction.

Diaverum: a greater degree of responsibility and accountability of overall patient service, and thus an incentive to provide better care at lower total costs.

Context for renal care services in Portugal

Portugal has over one million patients with chronic kidney disease. **To improve total spending and cost predictability (Ministry of Health) and care delivery (Diaverum) the following measures were taken:**

2008

the Portuguese Ministry of Health (MoH) **altered the reimbursement of private dialysis** providers by adding a number of adjacent service elements, and moving from fee-for-service to capitated payments

2011

the MoH **included vascular access surgery** to the dialysis service bundle

2014

Diaverum – on its own initiative – **introduced the Patient Care Coordination program**

This report evaluates Diaverum Portugal's response and performance to these changes, by introducing its integrated dialysis care model, utilising clinical and operational data as well as insights from interviews conducted with clinical staff and management.



Context

Why has the Portuguese government decided to change the dialysis delivery model?



Context for renal care services in Portugal before 2008

Increasing number of patients with chronic kidney disease

Portugal has one of the **highest incidence and prevalence rates of stage 5 chronic kidney disease** in Europe that terminates into end stage renal disease (ESRD) and dialysis.




Dialysis is a resource intensive therapy and costly to the healthcare system

Chronic kidney disease (CKD) is a very complex health condition. Most patients are elderly with many comorbidities and a complex psychological and sometimes social environment. They have to attend a strict dialysis schedule of 3 treatments per week (4 hours each).



Following the 2008 financial crisis, Portugal targeted to reduce public healthcare spending

Following the **global recession of 2008** the financial state of Portugal was in disarray. The government was looking to implement austerity measures and reduce public expenditure – with one of the targeted efforts including healthcare.



The need for austerity measures following the financial crisis put severe constraints on the healthcare budget, which was conflicting with increasing costs for the public sector due to high disease prevalence

Delivery

Public sector – the first renal care treatment is provided in the public hospital while - due to capacity constraints in the public sector - subsequent dialysis treatments are mainly subcontracted to the private sector using public funds.

Private Sector – based on referrals from the Portuguese National Health Service, patients are referred to a specific clinic which is operated by one of three larger international providers (Diaverum, DaVita, NephroCare), or some smaller local providers.

Service provision is split between the public and private sector, with the private sector receiving a fee-for-service reimbursement until 2008

Reimbursement

Before 2008 – under the fee-for-service reimbursement system, private providers were paid separately for service consultations and dialysis treatments. Medication and other services (e.g. lab) were prescribed by the nephrologist but the provisioning and reimbursement was organized by the public sector, outside of the clinic's responsibility.

Challenges & Objectives

What has Portugal done in order to reduce health expenditure despite increasing patient numbers?



Challenges

- Portugal had an **increasing number** of dialysis patients.
- **Greater costs** for the public healthcare system.



Objectives

- **Reduce** increasing **health expenditure** (lowering the total cost of care while maintaining medical outcomes).
- Improve the ability of the Ministry to **forecast future health expenditure** based on the (expected) number of patients.



Policy Response

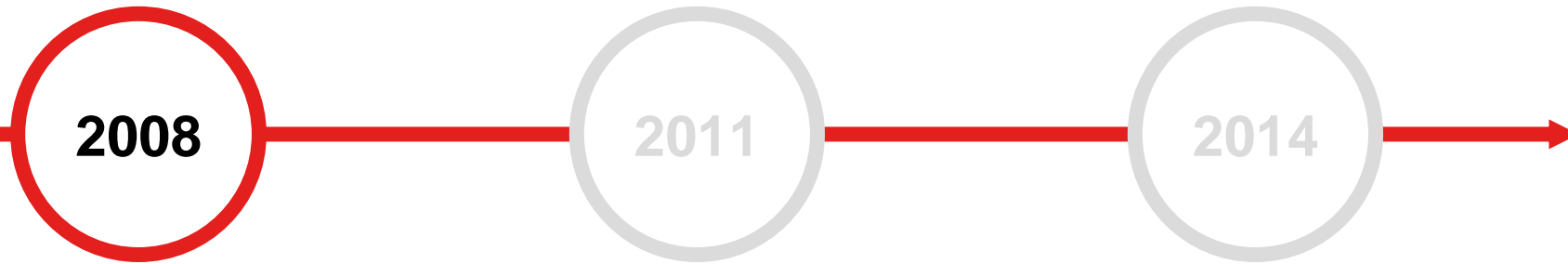
Restructuring of the reimbursement system: **change to capitated payment.**

Policy Response

What was the response, and what did the government and private providers want to accomplish?



Response from the Ministry in 2008: policy action applicable to all private dialysis providers in Portugal



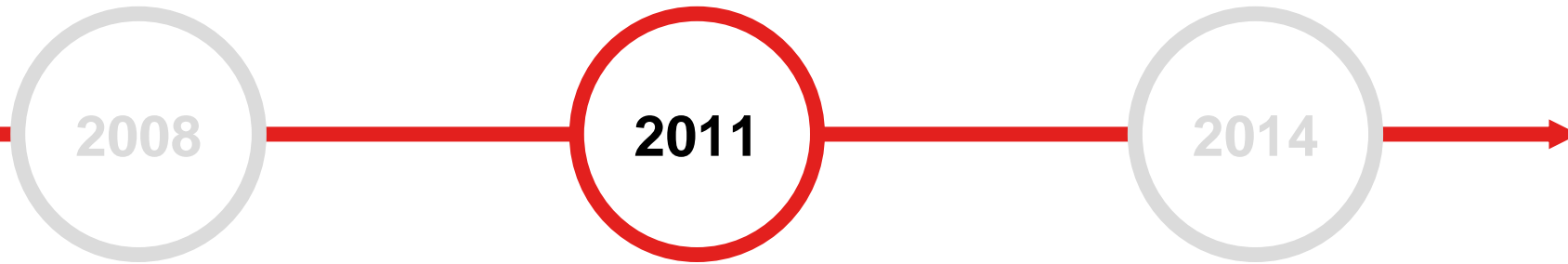
Change to capitated payments per patient per week inclusive of treatment, lab tests and medicines followed by redesigned quality indicators.

Background: the transition to capitated payment was not motivated by patient health outcomes or medical policy, but instead a financial decision from the Portuguese government. Quality indicators were negotiated with the Ministry of Health for the following categories: Kt/V, treatment frequency, treatment time, medical KPIs, water quality, hospitalization and mortality.¹

In order to reduce total costs, the Ministry of Health changed the reimbursement to capitated payment per patient per week with redesigned quality indicators

¹eKt/V ≥ 1.2 in $>75\%$ of all patients; treatment frequency: % of patients treated thrice weekly $>90\%$; treatment time ≥ 12 h/week in $>90\%$ of all patients; Hemoglobin ≥ 10 g/dl and ≤ 13 g/dl in $\geq 70\%$ of all patients; Ferritin ≥ 200 and ≤ 800 ng/ml in $\geq 80\%$ of all patients; Phosphate ≥ 3.5 and ≤ 5.5 mg/dl in $\geq 50\%$ of all patients; % water quality tests that comply with guidelines $\geq 90\%$; <1 hospital admission/patient-year; Annual mortality $\leq 20\%$.

Response from the Ministry in 2008: policy action applicable to all private dialysis providers in Portugal



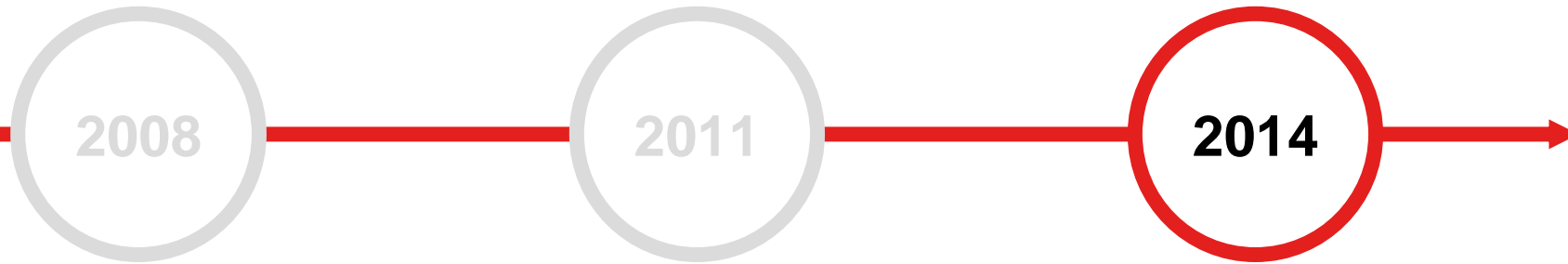
Inclusion of vascular access into the capitated payment (excluding the initial access provided from the public hospital¹).

Background: Economic downturn motivated the Ministry of Health to impose a severe reduction of the reimbursement rate of dialysis care, by 6%. Instead, the industry association negotiated with the government to limit the payment reduction to 2%, but to include vascular access into the service bundle. Diaverum opted to outsource vascular access surgery to external partners, subject to clear guidelines and audit of results under a capitated payment service agreement.

Vascular access was included in the bundled service offering in 2011 along with a 2% cut in reimbursement

¹The first vascular access is the responsibility of the public hospital and subsequent vascular access are the responsibility of the provider

Response from the Ministry in 2008: policy action applicable to all private dialysis providers in Portugal



Diaverum developed and introduced the Patient Care Coordination program in order to adequately respond to the patient's individual needs.

Objective: Diaverum looked to address the increasing diversity of their patients' medical profile with the objective of improving quality, satisfaction and communication with providers while reducing hospitalisations, variation and mortality. Thus, lowering the total cost of care to the Portuguese healthcare system.

Action: interdisciplinary care teams were created, consisting of nephrologists, nurses, social workers, pharmacists and nutritionists. Clinic operations were restructured, requiring physicians to adapt to the provision of integrated care, shared decision making and greater emphasis on patient education.

Outcome: significant operational and clinical changes with improvements for patient satisfaction and increased efficiency.

Diaverum emphasized patient centered care by introducing the Patient Care Coordination program, thus creating a truly integrated dialysis care concept.

Summary of changes to service scope and reimbursement from 2008 to 2014

POLICY CHANGE	FEE-FOR-SERVICE	CAPITATION	INCLUSION OF VASCULAR ACCESS	PATIENT CARE COORDINATION
Date	Pre-2008	2008 ¹	2011	2014
Instigator of change	–	Ministry of Health	Ministry of Health	Diaverum
Objective	–	Reduce health expenditure, improve forecasting of future expenditure	Reduce health expenditure, improve forecasting of future expenditure	Improve quality of patient care, reduce unwarranted variation
SUPPLY-SIDE INPUTS				
Medicines & lab tests	Ministry of Health	Diaverum	Diaverum	Diaverum
Human resources	Nephrologists, general practitioners, nurses & administrative staff	Addition of pharmacists	Unchanged (outsourced)	Addition of integrated care teams including nutritionists, social workers & pharmacists
Vascular access surgery	Ministry of Health	Ministry of Health	Diaverum	Diaverum
Blood transfusions	Ministry of Health	Ministry of Health	Diaverum	Unchanged
Transportation	Ministry of Health	Unchanged	Unchanged	Unchanged
REIMBURSEMENT LEVEL				
Average reimbursement per patient per week (€)	344.37 ²	547.94	537.25 ³	Unaffected



Data Analysis

What were the effects, and what were the implications?



Diaverum Portugal performance when moving towards integrated dialysis care

Three circles are arranged horizontally. The leftmost circle has a thick red border and contains the text 'Medicines and lab tests'. The middle and right circles have thin grey borders and contain the text 'Vascular access surgery' and 'Company performance – KPIs and outcomes' respectively.

**Medicines
and lab tests**

**Vascular
access
surgery**

**Company
performance
– KPIs and
outcomes**

Medicines and lab tests following implementation of capitated payments

Prior to capitation, Diaverum was not responsible for the cost of medication and lab testing



Following capitation, medication and lab tests were included in the service bundle:

1

Diaverum had greater control over the procurement and management of medicines from purchase to dispensing.

2

Procurement, contracting of medicines, and laboratory testing was standardised and centralised across clinics.

3

With approval from Infarmed¹, pharmacies were established within dialysis clinics enabling clinical directors to closely monitor prescribing and establishing benchmarks according to the patient case-mix.

4

Pharmacists also implemented medical reconciliation to ensure correct medication regimens to patients.

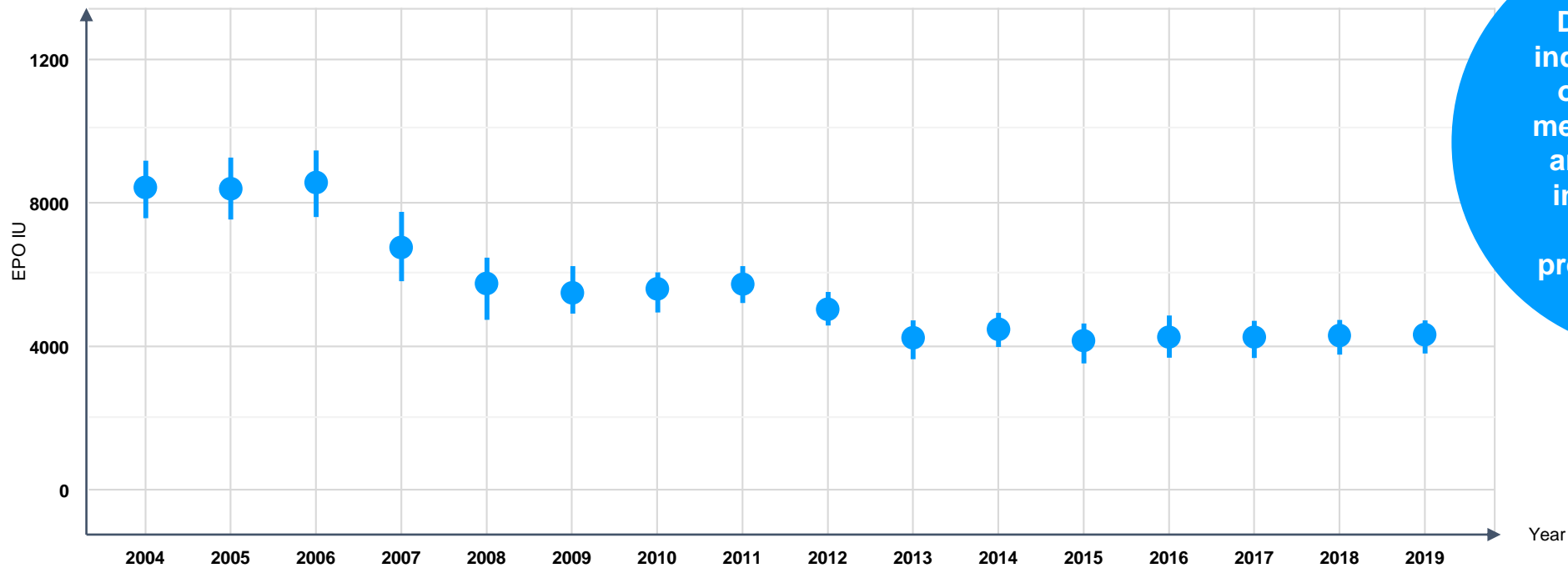
The expansion of the service scope allowed Diaverum to improve efficiency by gaining control of the management of medication and testing

¹Portuguese government regulatory agency for medicines

Strong decline in mean weekly EPO doses¹ and reduction of standard deviation by >40% between 2008 and 2019

Mean EPO doses declined significantly over time; variation in the mean total weekly EPO dose observed across the Diaverum Portugal clinics reduced from a standard deviation of 1267 IU in 2008 to 758 IU in 2019¹.

Diaverum Portugal – mean total weekly EPO dose



Declining trend indicates adoption of international medical guidelines and reduction in inefficiency and waste in prescribing doses

¹Note: during the observation period, international medical guidelines recommended a reduction of average EPO doses which was reinforcing the decline in mean total weekly EPO dose: Pisoni RL, Gillespie BW, Dickinson DM, Chen K, Kutner MH, Wolfe RA. The Dialysis Outcomes and Practice Patterns Study (DOPPS): design, data elements, and methodology. *Am J Kidney Dis.* 2004;44(5 Suppl 2):7-15. doi:10.1053/j.ajkd.2004.08.005; Teehan G, Benz RL. An update on the controversies in anemia management in chronic kidney disease: lessons learned and lost. *Anemia.* 2011;2011:623673. doi:10.1155/2011/623673 Moist LM, Foley RN, Barrett BJ, et al. Clinical practice guidelines for evidence-based use of erythropoietic-stimulating agents. *Kidney Int Suppl.* 2008;(110):S12-S18. doi:10.1038/ki.2008.270

Diaverum Portugal performance when moving towards integrated dialysis care

Three large circles are arranged horizontally. The left and right circles have a light gray border, while the middle circle has a thick red border. Each circle contains text centered within it.

**Medicines
and lab tests**

**Vascular
access
surgery**

**Company
performance
– KPIs and
outcomes**

Addition of vascular access surgery to the capitated service bundle in 2011

In 2011, provision of AV fistulas¹ was included in the capitation package²

Vascular access has high impact on patient survival and other outcomes



1

Diaverum expanded the provision of AV fistulas to achieve better health outcomes and lower treatment costs

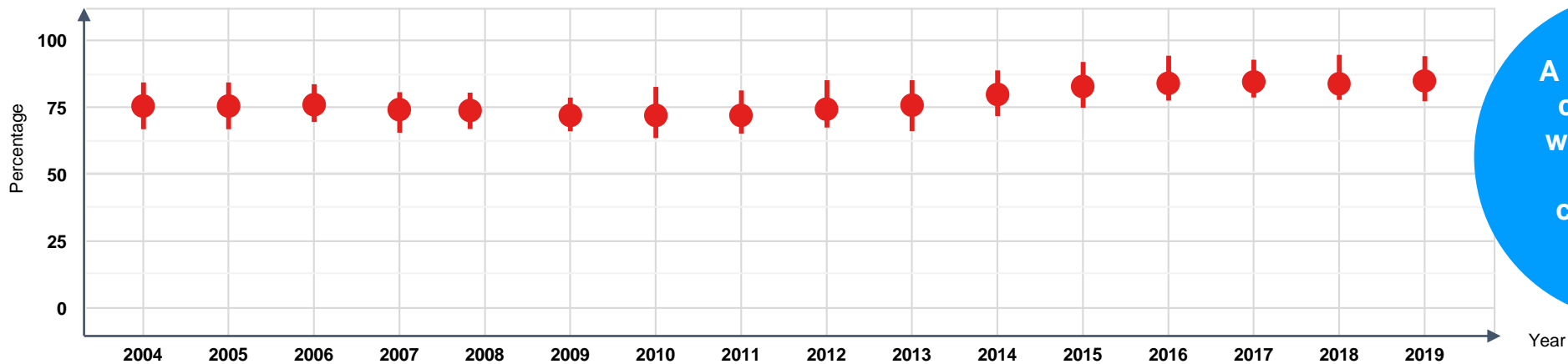


2

To keep cost under control, a capitation payment system was implemented with a third-party vascular access provider

Outcome: in 2017, the AV fistula rate in Diaverum (80%) was higher than the national rate (73%)

Diaverum Portugal – AV-fistula proportion – overall mean value for all clinics



A high level of care quality was achieved with more certainty on invoicing

¹ First vascular access is under the responsibility of the public hospital; subsequent vascular access and vascular access maintenance is under the responsibility of the provider

² Private providers opted to accept a 2% cut to reimbursement with the inclusion of vascular access to the capitation package (as opposed to a 6% cut without vascular access)

Diaverum Portugal performance when moving towards integrated dialysis care



**Medicines
and lab tests**

**Vascular
access
surgery**

**Company
performance
– KPIs and
outcomes**

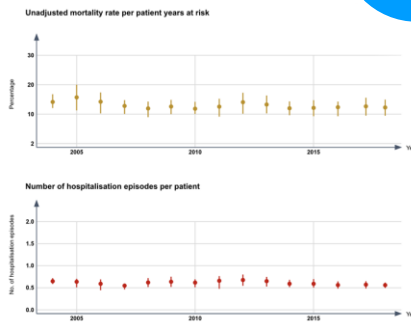
Improved outcomes and higher patient satisfaction despite older and more complex patients

1



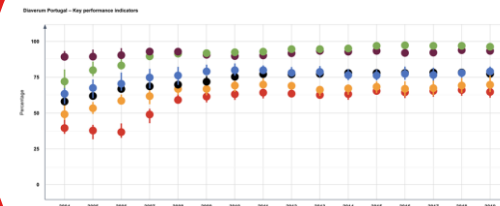
Despite an **increasingly old** and **complex** patient base...

2



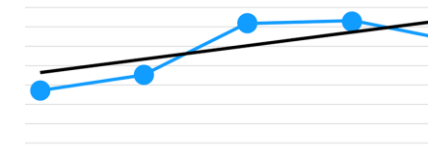
...**mortality** and **hospitalization** has remained **stable**...

3



... **medical KPIs** have continued to **improve**...

4



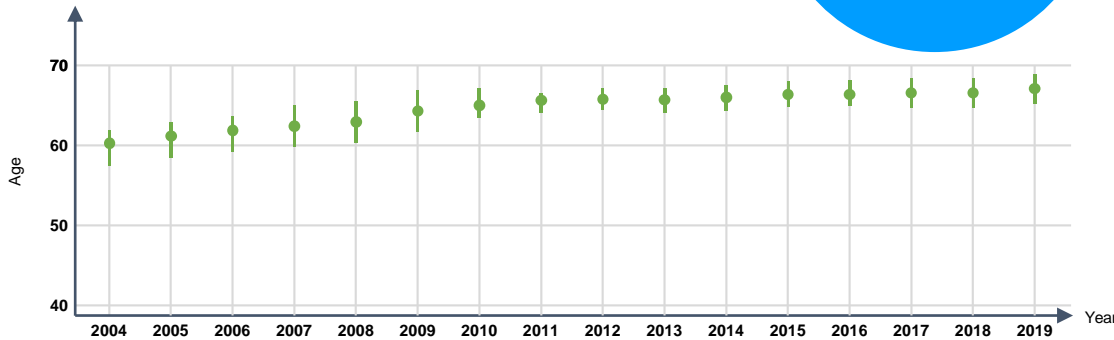
...while **patient satisfaction** has further **improved**.

Complexity of Diaverum Portugal patients increasing between 2008 and 2019, but mortality and hospitalisation remain unchanged

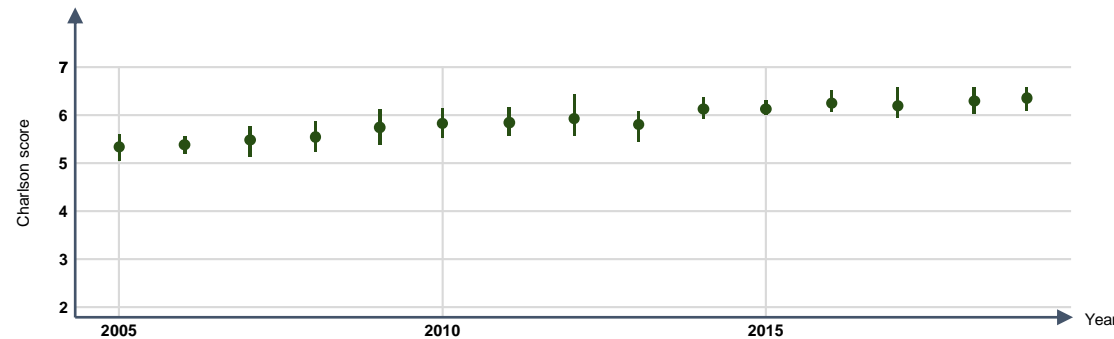
1 Age of patients and comorbidity burden as measured by the Charlson Comorbidity Index have increased.

Patient age, disease burden, and number of comorbidities increased over time

Patient age



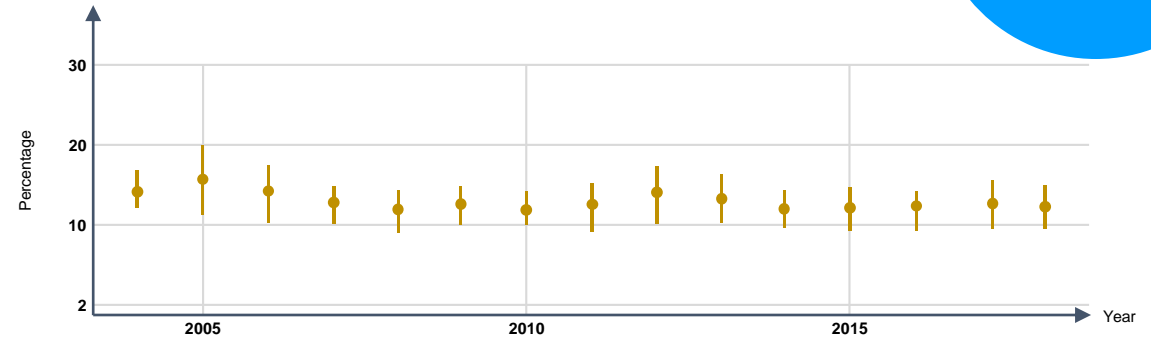
Charlson Comorbidity Index



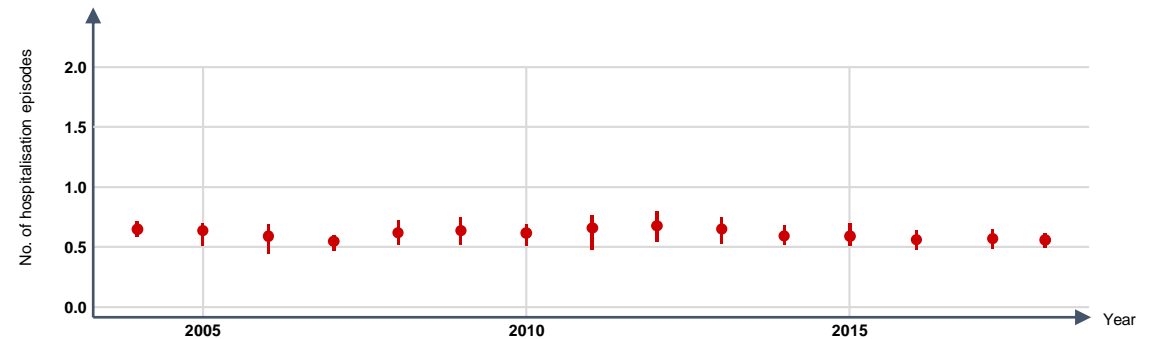
2 Mortality rate and number of hospitalisation episodes per patient remained stable or improved slightly.

Medical outcomes remained unchanged despite increase in multimorbidity and age

Unadjusted mortality rate per patient years at risk



Number of hospitalisation episodes per patient

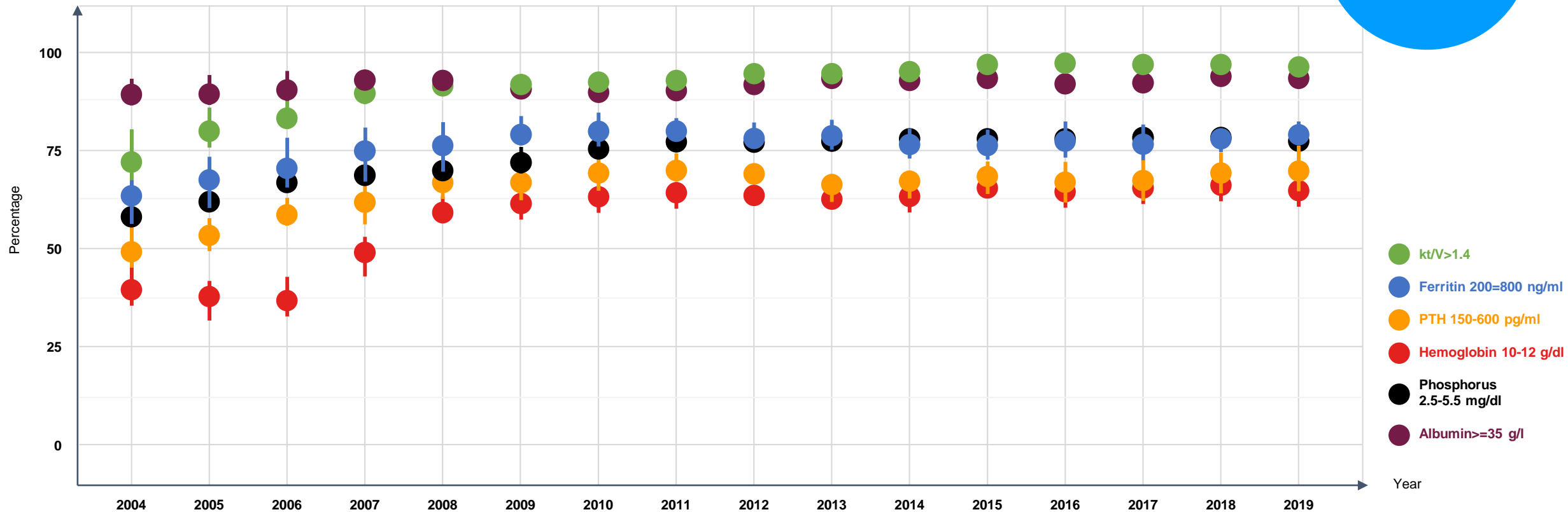


Medical outcome KPIs continued to improve during the transformation to integrated dialysis care

3 KPIs were improving over time due to improved nephrological care. Measures taken by Diaverum to adapt to the introduction of capitated services and integrated dialysis care have not adversely affected the quality of care provided to patients.

Medical KPIs improved despite increase in multimorbidity and age

Diaverum Portugal – Key performance indicators

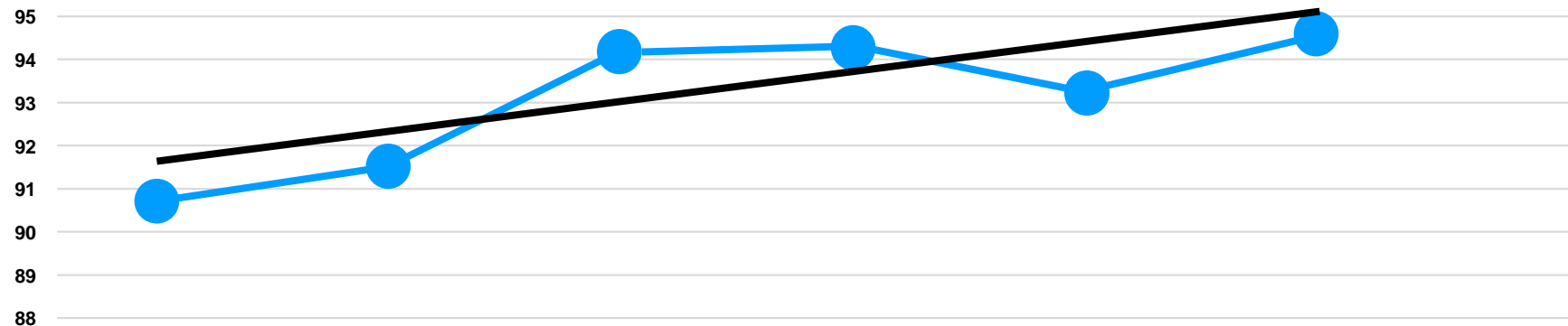


Patient satisfaction improved most years amidst the context of increasing patient disease burden

4 Patient satisfaction was already high in 2013 with a score of 90 out of 100 maximum achievable points and continued to improve in five out of six subsequent years after the introduction of integrated dialysis care.

During the period from 2013-2018¹, it was overwhelmingly clear that **patients rate the quality of care, education and staff engagement as exceptionally high across Diaverum clinics**. Over the six years, average patient satisfaction² was initially 90.80 and increased to 94.59 by 2018. Collectively, there was a positive trend of improvement for each of the six indicators, the strongest improvement was for “waiting time before treatment”.

Patient satisfaction (2013-2018)



¹ First vascular access is under the responsibility of the public hospital; subsequent vascular access and vascular access maintenance is under the responsibility of the provider

² Private providers opted to accept a 2% cut to reimbursement with the inclusion of vascular access to the capitation package (as opposed to a 6% cut without vascular access)

Key Takeaways

Were the changes beneficial for patients and the government?



As a result of bundled dialysis services

- **Better management of medicines** – improved medication review with patients, managing medication strategies with other comorbidities, and increased compliance with treatment protocols.
- Improved IT system which allowed for better communication between healthcare facilities and care teams. This contributed to **reducing unnecessary tests and increased patient confidence** in providers and treatment plans.
- Subsequent inclusion of vascular access care increased the percentage of patients with AVF allowing for **better medical outcomes and lower hospitalization and mortality risk.**



Quality of care increased following the implementation of bundled services and integrated dialysis care

As a result of integrated dialysis care (incl. Patient Care Coordination)

- Reported an **increase in patient satisfaction** for most years since the introduction of Patient Care Coordination.
- Greater **involvement in shared decision making** for treatment strategies – greater specificity on constituent components for patients as a result of interdisciplinary care teams focusing on medicines, nutrition, fluid intake, physical activity and overall well being.
- Pharmacists in clinics managed medication strategies, **reducing non-compliance** and relaying information to the care team.
- **Enhanced education programs** for patients, and increasing competency and accountability for treatment.

Benefit for the public sector and government as a result of bundled dialysis services and integrated dialysis care

1. Enabled Ministry of Health to **reliably forecast** future public **health expenditure**.
2. Lower total healthcare costs **through greater efficiencies for procuring and financing medicines and services**:
 - standardisation of suppliers, bulk purchasing, price negotiations and procurement of generics from the private dialysis providers saved the public sector both administrative resources and money.
 - reduced usage of medicines by limiting waste and ensuring adherence to medical guidelines for patients.
3. Subsequently **freeing resources for the public sector** to allocate to other patients and segments of the health system.
4. Patients perceive the benefit of integrated dialysis care, expressed in **increasing patient satisfaction** – meaning greater service for the public sector without any additional cost.
5. Provided the healthcare authorities the opportunity to **hold private providers fully accountable for the medical outcomes** through transparent KPIs.

The Ministry of Health achieved its goal and saved on money and resources without any sacrifice to care quality



In summary

Dialysis providers were able to:

1
Reduce overall costs to the healthcare system, by improved medical outcomes and treatment compliance by patients

2
Improve medical outcome KPIs and patient satisfaction, by being fully accountable for all dialysis related bundled services

3
Maintain stable mortality and hospitalisation rates, despite increasing patient age and comorbidities

Following the transition from fee for service to capitation and integrated dialysis care, patient outcomes have improved while public expenditure has been reduced