

# EVALUATION OF THE RECOMMENDATIONS COMPLIANCE ON THE DIABETIC NEPHROPATHY MANAGEMENT IN FRANCE : THE ND-CRIS COHORT (2012-2017)



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## Background

▪ **Diabetic kidney disease (DKD) is the leading cause of dialysis**  
Most dreaded complication of diabetes, diabetic nephropathy is the leading cause of end-stage kidney disease. The annual cost of dialysis for French Mandatory Insurance estimated at €2,6 billion, the rising prevalence of diabetes, as well as the impact on patients' quality of life, make diabetic nephropathy a public health matter. Furthermore, its care is complex as it involves two long-term irreversible illnesses.

▪ **Guidelines are set to delay the onset of dialysis**

Thus, the French health technology agency (HAS), in charge of health technology assessment and medical recommendations in the country, drew guidelines to improve the DKD management in France. Based on scientific studies and expert opinions, they are designed to be a decision tool for health professionals in order to enhance patients' quality of life and decrease the social cost of the disease. Two sets of HAS guidelines are available, one related to blood sugar control<sup>1</sup>, the other to blood pressure control<sup>2</sup>. International guidelines are consistent with the French ones (American Diabetes Association 2017<sup>3</sup>, Kidney Disease Outcome Quality Initiative 2007<sup>4</sup>).

## Aims

- (i) To assess the **guidelines compliance** in the management of diabetic kidney disease in France
- (ii) To assess the **impact of the guidelines compliance** on survival before dialysis or death.

## Methods

- The ND-CRIS cohort is a **non-interventional** open cohort including patients with chronic kidney disease from stage 3 to 5 **before dialysis**, treated by nephrologists in France.
- Our study only includes patients who also had diabetes, the number of which were 1589.
- To reach a clinical objective, HAS set recommended combinations of medications, according to the severity of the disease.

### Diabetic nephropathy guidelines

#### BLOOD SUGAR CONTROL

**Objective** : HbA1c < 7% for patients in stage 3, HbA1c < 8% for stage 4 and 5

**Treatment** : 1) Dietary rules  
2) Oral antidiabetics  
3) Insulins and analogues

⚠ To avoid toxic levels of drugs which are eliminated via the renal route, most of **oral antidiabetics are contra-indicated** in stage 4 and 5, and metformin is tolerated at moderate intake in stage 3.

#### BLOOD PRESSURE CONTROL

**Objective** : Blood pressure < 130/80 mmHg and Albuminuria < 30 mg/day

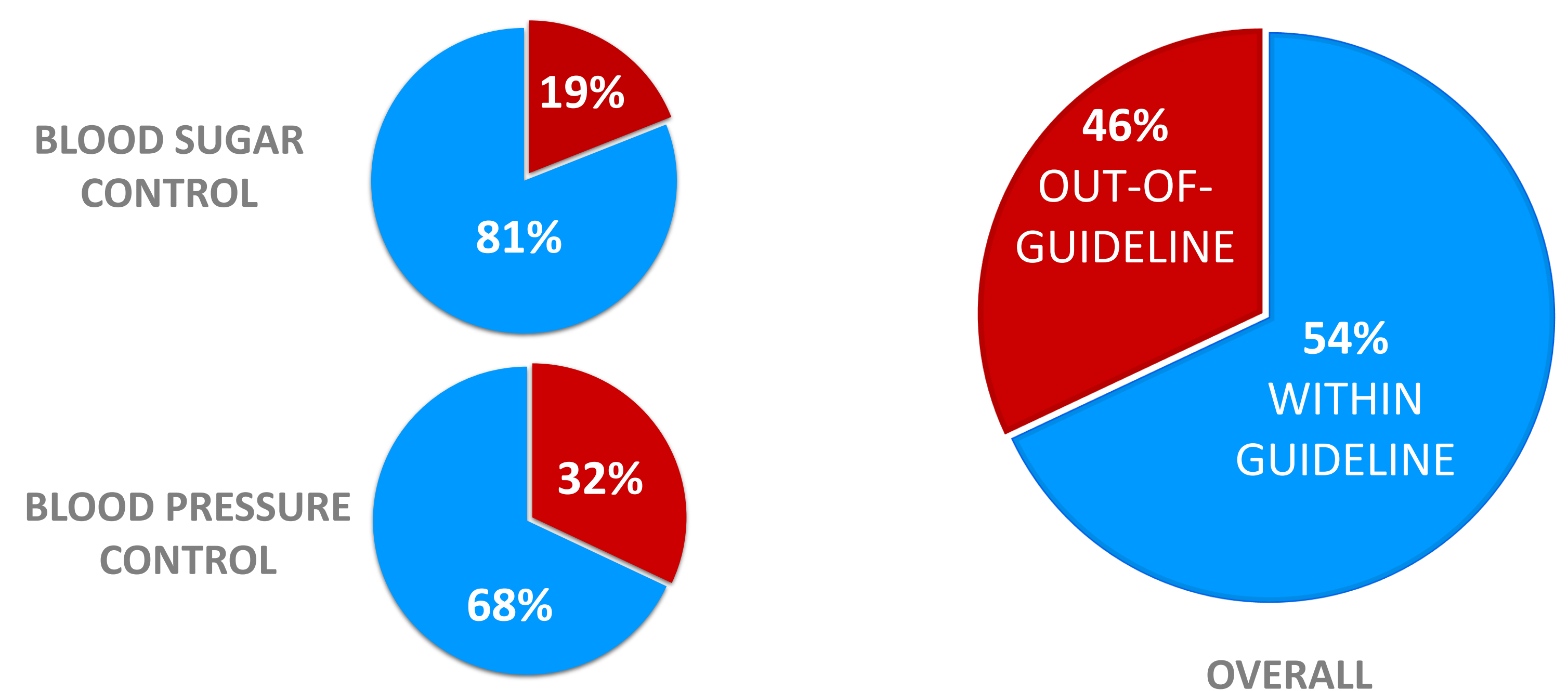
**Treatment** : 1) Dietary rules  
2) Renin-angiotensin system blockers  
3) Combination with other class of antihypertensive drugs

### Impact of guidelines compliance on patients' health

- Survival before dialysis or death was compared between 2 groups of patients : Within guideline vs Out-of-guideline
- Propensity score matching simulated randomization to **make the groups comparable**
- Kaplan-Meier curves **assessed survival before dialysis or death** of the 2 groups
- Logrank test checked if the curves were significantly different
- Cox regression estimated instantaneous hazards to start dialysis or die

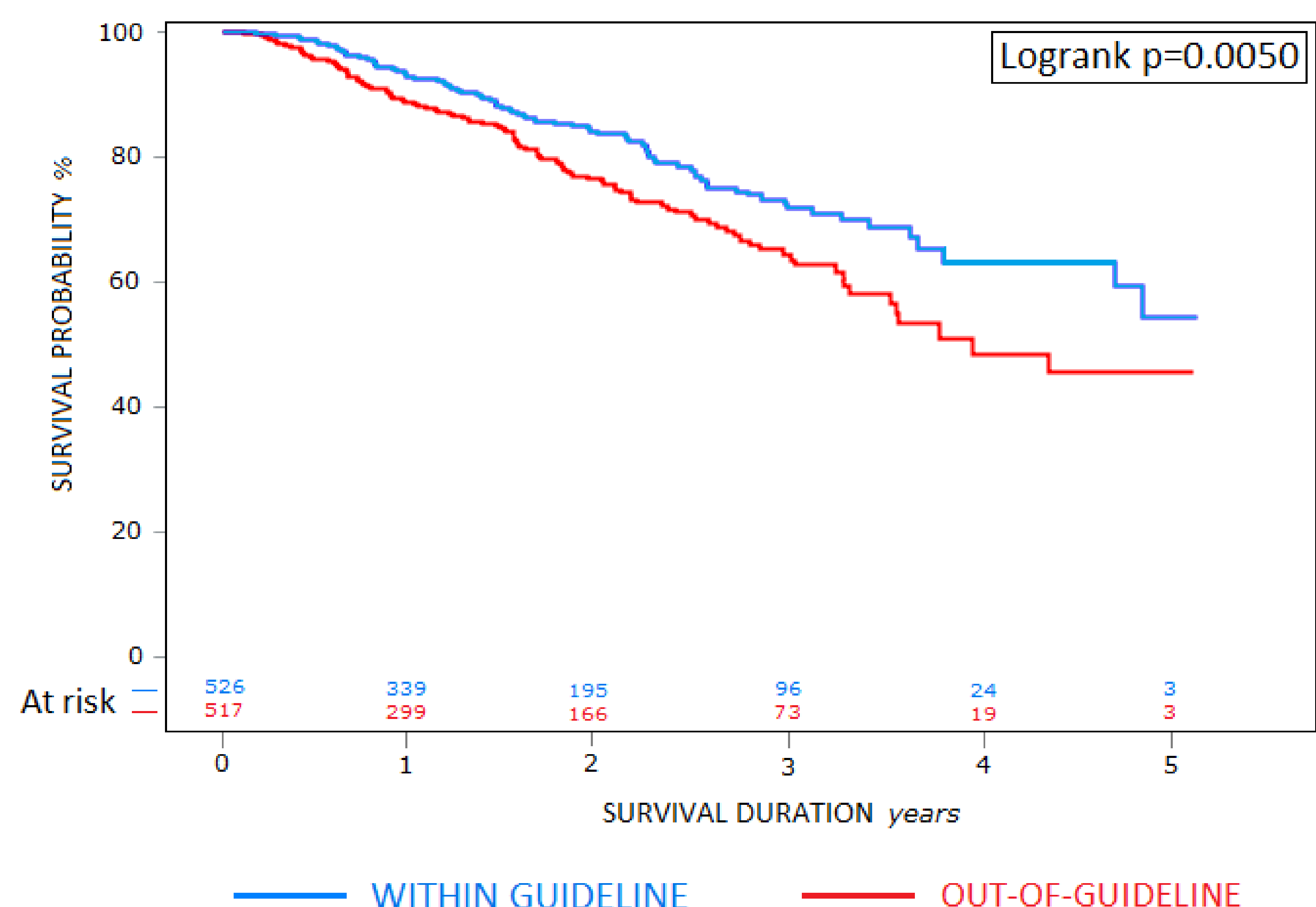
## Results

### Guidelines compliance in the care of DKD in France



- **46% of patients are given an out-of-guideline prescription in the care of DKD in France.**
- 11% of patients in stage 4 or 5 are given contra-indicated antidiabetics given their reduced renal function
- 33% of patients taking metformin in stage 3 are given too high a dose
- 28% of patients are not given renin-angiotensin system blockers, which are the first-line medications to control blood pressure

### Impact of guidelines compliance on the occurrence of dialysis or death



- **Guidelines compliance has an impact on patients' health**, as patients with DKD have significantly better survival before dialysis or death when prescriptions comply with guidelines.
- A quarter of patients whose prescriptions don't comply with guidelines started dialysis or died 2 years after inclusion, versus 2.7 years for patients whose prescriptions do.
- Patients whose prescriptions don't comply with guidelines are 54.3% (p=0.0025) more at risk to start dialysis or die than patients whose prescription do.

## Conclusion

- Almost **half of patients are given out-of-guideline prescriptions.**
- A significant number of patients are **exposed to toxic levels of antidiabetic drugs**, putting their health in danger.
- Guidelines compliance appears as an **efficient tool to delay dialysis onset.**
- In order to improve patients' health and reduce social cost of DKD, French healthcare system has to **insure of the proper follow-up of guidelines.**

## References

1. HAS (2013), « *Treatment strategy for Glycaemic control in type 2 diabetes* »
2. HAS (2012), « *Care pathway guidelines – Chronic kidney disease* »
3. ADA (2017), « *Standards of medical care in diabetes* »
4. KDOQI (2007), « *Clinical practice guidelines for chronic kidney disease* »