VALUE CHAIN HEALTHCARE

HOW TO IMPROVE HEALTHCARE MANAGEMENT IN LAB MEDICINE USING SYSTEMATIC BIG DATA ANALYTICS

An example of diabetic patient care improvement in French laboratories

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ABSTRACT

To improve diabetes care management, we used a big data analysis to show how the HbA1c prescriptions can be improved.
In our study, data from more than 110 000 patients (more than 200 000 HbA1c tests) were analysed.

Due to interaction with prescribers discussing these data we achieved:

- An increase of the HbA1c testing
- Among screening patients, we found up to 10% of pathological results andapproximately 35% of grey zone results ("pre-diabetics")
- Special report of HbA1c testing by patient was created for each prescriber to better manage the monitoring of diabetic patients

CONTACTS

LABEXA Group is a group of medical analysis laboratory centers with a strong regional implantation
(N°1 in Nouvelle Aquitaine region, France).
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INTRODUCTION

Diabetes is one of the leading diseases in the world with more than **400 million** diabetics globally.

Diabetes will become the **7th cause** of death in the world by 2030 (WHO forecast).[1]

To improve diabetes care management, we used a big data analysis to show how the HbA1c prescriptions can be improved.
In our study, data from more than 110 000 patients (more than 200 000 HbA1c tests) were analysed.

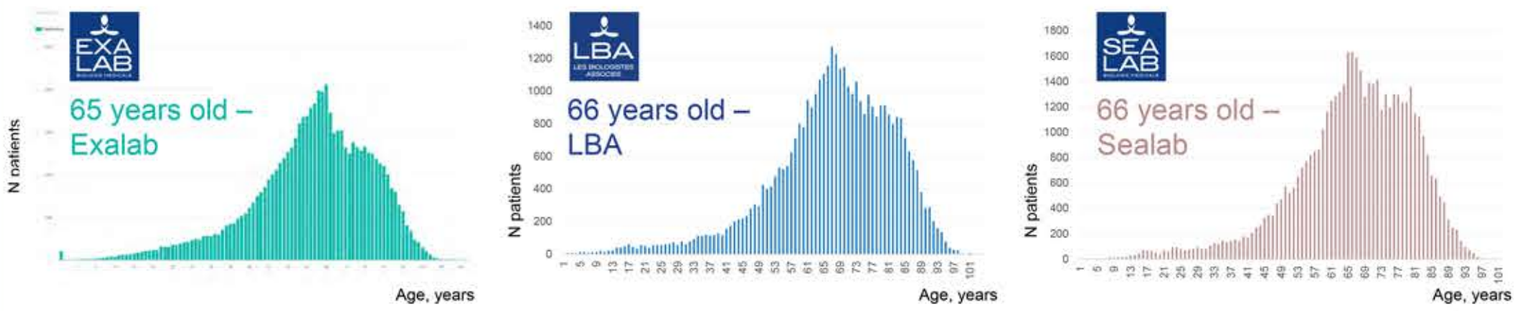
MATERIAL AND METHODS

In this work, we did a retrospective study of the results of the HbA1c level of our patients; data from more than 110 000 patients (more than 200 000 HbA1c tests) were analysed.
Different parameters were closely examined:

- Information about number of patients and patient visits
- Test result and age averages
- Average result by age
- Result type (diabetes, grey zone, low risk zone)
- Visits analysis
- Information about prescribers and possible assay increase.

RESULTS

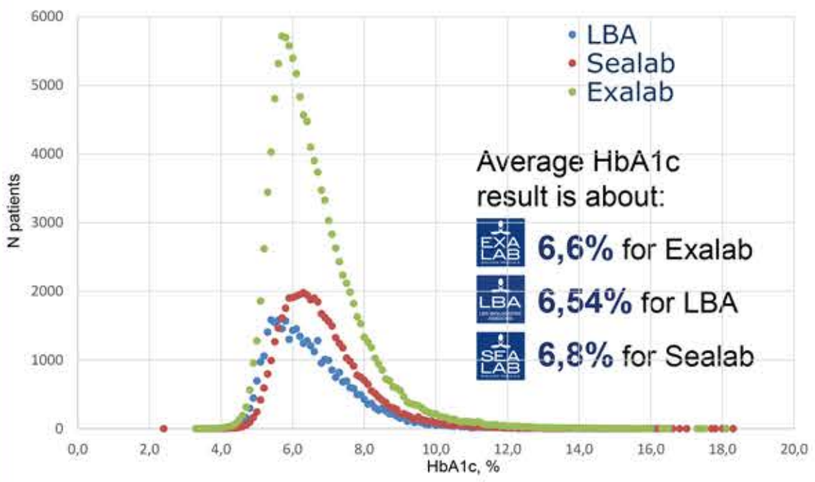
HBA1C STATISTIC, DETAILED ANALYSIS FOR LABEXA GROUP: AVERAGE AGE OF PATIENTS



Examination of population tested with HbA1c shows an average age above 65 years although recommendation is 45 years[2]. That means that HbA1c in our laboratories is requested mostly for monitoring in accordance with the French national recommendations.

IT SEEMS POSSIBLE TO GIVE A GREATER VALUE TO THE DIAGNOSIS BY USING IT FOR SCREENING PURPOSES. [3]

HBA1C STATISTIC, DETAILED ANALYSIS FOR LABEXA GROUP : AVERAGE HBA1C RESULTS



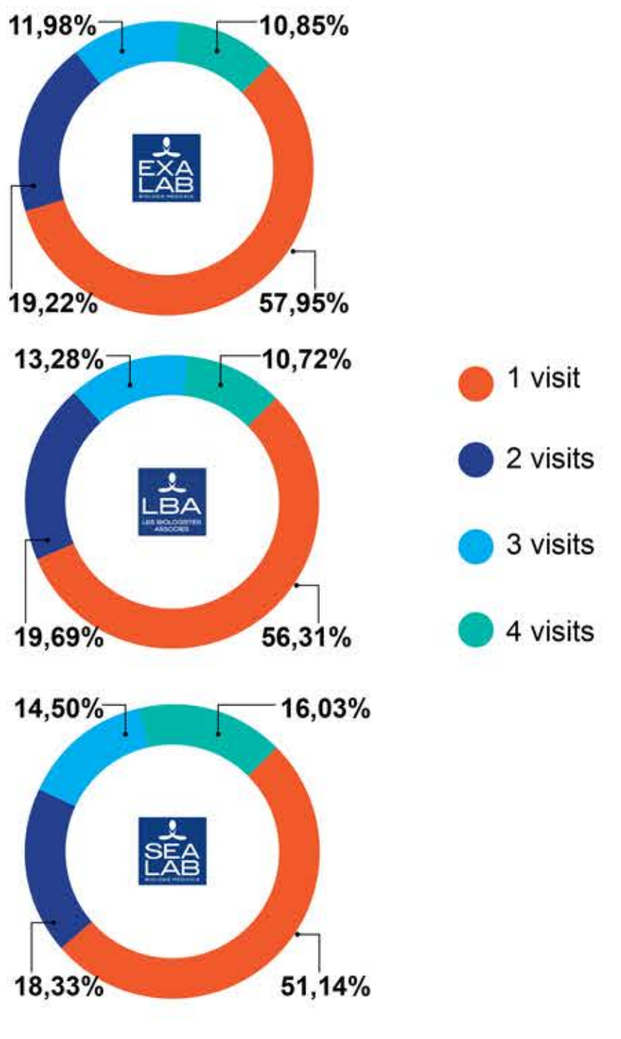
RESULTS BY TYPE DISTRIBUTION, %

	EXALAB	LBA	SEALAB
Diabetes HbA1c ≥ 6,5 %	45,51	45,02	56,41
Grey Zone HbA1c 5,7 – 6,4%	33,62	28,96	30,86
Low risk HbA1c <5,7 %	20,87	26,02	12,73

The average result for HbA1c value was pathological: 6,6 % (NGSP). WHO and ADA define an HbA1c cut-off criteria for type 2 diabetes diagnosis as 6,5 % [2].

APPROXIMATELY 30% OF RESULTS WERE IN A GREY ZONE (HBA1C 5,7-6,4%), THAT IS RECOGNIZED BY ENDOCRINOLOGISTS AS "PRE-DIABETIC" RESULTS.[4]

HBA1C STATISTIC, DETAILED ANALYSIS FOR LABEXA GROUP : NB OF VISITS PER YEAR (2016)



WE FOUND THAT ONLY 13% (10,72 %–16,03 %) OF DIABETIC PATIENTS UNDERGO 4 TESTS PER YEAR, WHICH IS RECOMMENDED FOR DIABETES MONITORING [5].

ACHIEVEMENTS

Database analysis allows us to know:
How to talk to prescribers and what to talk about.
How the laboratory can bring more potential benefits.
How we can manage it.

We used a step by step approach and propose 4 solutions to support clinicians:

1. Information for prescribers in the lab report about references for diabetes screening and monitoring
2. Development and issue of booklets («comics») as well for doctors and for patients
3. Training programs for lab specialists
4. Seminars and conferences for the clinicians

+ 3,5 %
Patients tested for HbA1c between 2016 and 2017

+ 2,5 %
HbA1c tests between 2016 and 2017

CONCLUSION

A BIG DATA ANALYSIS APPROACH LETS US IMPROVE DIABETES MANAGEMENT CARE AS MUCH FOR THE MONITORING OF DIABETIC PATIENTS AS FOR DIABETES SCREENING EFFICIENCY

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[5] Guide parcours de soins Diabète de type 2 de l'adulte. HAS mars 2014.