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A Disease Management Program in France : Lessons from the RESALIS Experiment 18 Months Before and 12 Months After Public Health Interventions

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REES : Réseau d 'Evaluation en Economie de la Santé
http://www.rees-france.com

RESALIS: A Double Bet

- Creating a sub-group of innovative health care professionals, bringing together clinicians, care workers, a health insurance fund and a pharmaceutical company.

- Demonstrating, in a pragmatic situation, that a co-ordinated care network for a chronic disease such as asthma reconciles improvement in quality of care and reduction in costs to the health insurance fund.

Key Facts

- Resalis was created as an association in 1998
- Support from the Eure CPAM CA and CNAMTS at the end of 1998
- Approved by the Soubie commission in December 1998
- First patients included in April 1999
- Inauguration of the breathing centre in2000
- Support from FAQSV end of 2000
- First results published in 2001

A Network, to Do What?

- ✓ Educate
- ✓ Train
- ✓ Share
- ✓ Standardise
- ✓ Evaluate
- ✓ Remunerate
- ✓ Administer

Players in the Network

- **104 health care professionals**
  - **43 doctors, 40 pharmacists, 21 paramedical staff**
- **a scientific council**
  - **Respiratory physicians, experts in medical I.T., evaluation and education systems, etc.**
- **an external assessor**
  - **REESFrance**
- **additional partners**

  Evreux Hospital, the Evreux mayor's office, the Eure General Council, URCAM .

Description of the Intervention

6 HEALTH PROGRAMMES

- Computerisation of the consulting clinics
- Exchange of medical and paramedical records
- Introduction of medical guidelines
- Medical training for doctors
- Patients' educations
- Evaluation programme Continuous recording practices onto a specific database

Objectives of the Evaluation

TO DEMONSTRATE that management of patients in the context of a ***Co-ordinated Care Network***® allows:

- MEASUREMENT of the effectiveness of treatments in everyday practice
- EVALUATION of the impact of a health education programme
- ESTIMATION of the economic benefits of improved management

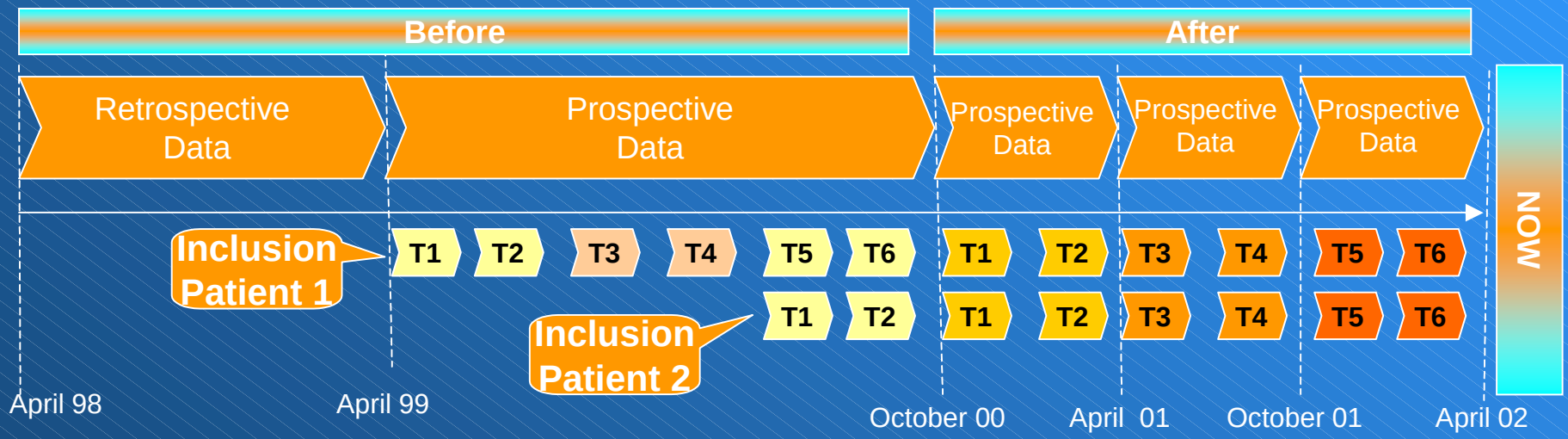
METHOD

- Inclusion criteria
- Design of the study
- Information system
- Patient stratification
- Plan of the analysis

Inclusion Criteria

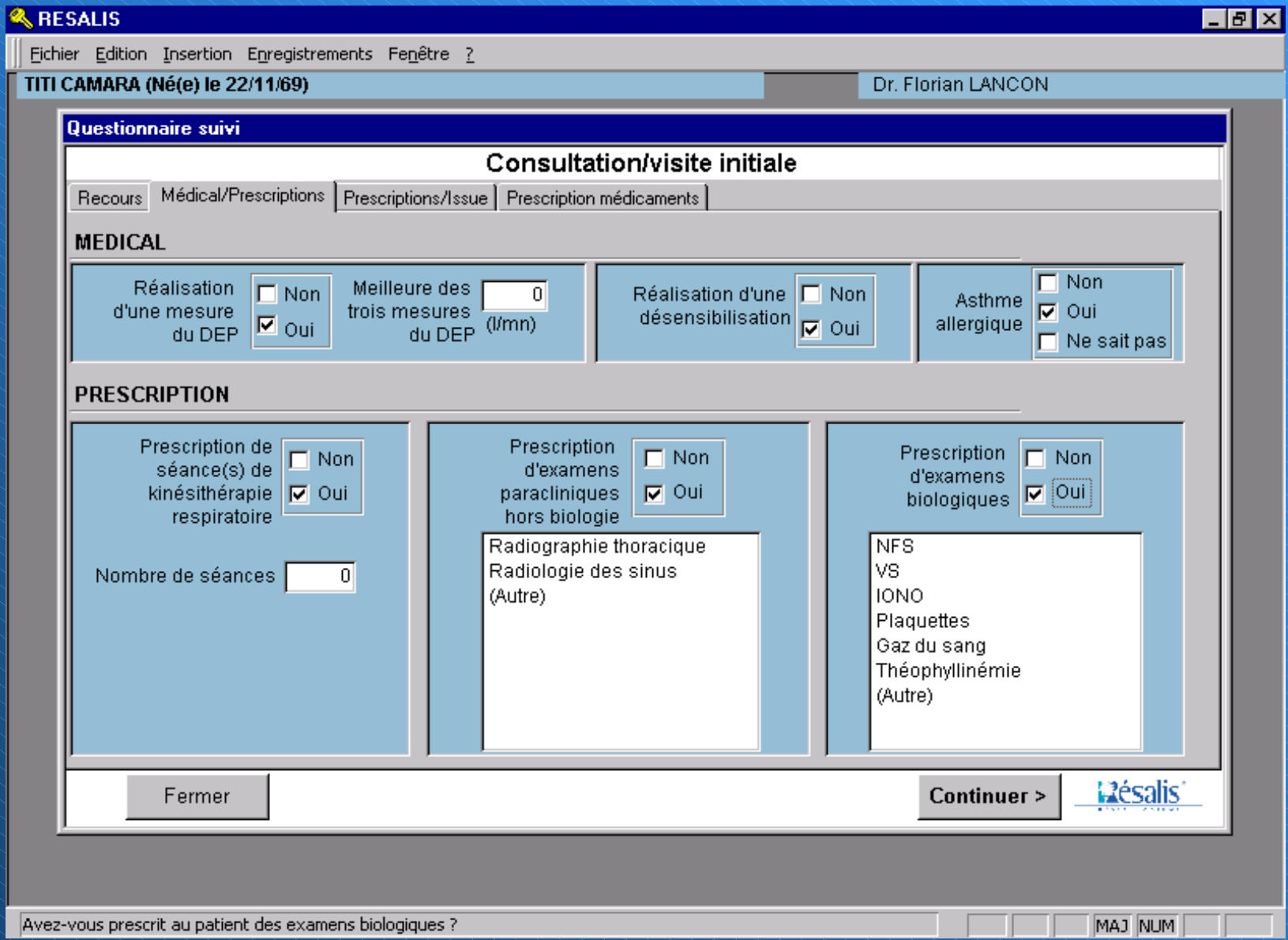
- Adults and children over 10 years old
- Asthmatic patients regardless of grade
- Patients who have given their informed consent and are prepared to attend the educational sessions offered.
- Patients who reside in the region of Eure and who do not intent to leave the region within a period of 18 months

Study Design
«Before-After» Comparison



T = Quarter after inclusion

Computerised Information System



Database Structure
15 files - 189 variables

Detailed analysis of Ambulatory Consultations

DATSUIVI	**Date of visit (YYYYMMDD)**
TYPEREC	**Type of visit (medical visit, consultation, external hospital consultation, day hospital**
MAJOHONO	**Fee increase (YES/NO)**
MAJOURG	**Emergency increase (YES/NO)**
MAJONUIT	**Night increase (YES/NO)**
MAJODIM	**Sunday increase (YES/NO)**
PREXABIO	**Prescription of the laboratory investigations (YES/NO)**
PREDUC	**Prescription of education session (YES/NO)**
PRCURETH	**Thermal cure (YES/NO)**
CURHOSP	**With hospitalisation (YES/NO)**
PRSEJCLI	**Climate residential stay (YES/NO)**
AT	**Stopped work (YES/NO)**
ATTYPE	**Type of stop**
ATDUREE	**Duration of stop (days)**
ABPROFDU	**Duration of absence from work (days)**

Grades of Severity Defined by the General Practitioner

- *Grade 1 : intermittent asthma*
- *Grade 2 : mild persistent asthma*
- *Grade 3 : moderate persistent asthma*
- *Grade 4 : severe persistent asthma*

Level of Drug Therapy by Grade

GINA 1995

Grade 1 Intermittent asthma	No maintenance therapy
Grade 2 Mild persistent asthma	**Inhaled corticosteroids** (≤ **500** µg) **or** Cromone **or** Theophylline retard. **If necessary,** increase corticosteroids up to **800** µg **OR** **either** Beta2 LA, inhaled or oral, **or** Theophylline retard
Grade 3 Moderate persistent asthma	**Inhaled corticosteroids** (**800 – 1600** µg) **AND** **either** Beta2 LA, inhaled or oral, **or** Theophylline retard
Grade 4 Severe persistent asthma	**Inhaled corticosteroids** (**1600 – 2000** µg) **AND** Inhaled Beta2 LA **and/or** oral Bêta2 LA **and/or** Theophylline retard

Ref : GINA 1995

Plan of the Analysis

- **Clinical end point:**
  - **(i) number of follow ups with control during 3 months**
  - **(ii) median time to no control**

- **Financial end point:**
  - **(i) mean cost of 3 month follow up with control and without control**
  - **(ii) mean cost of a 3 month follow up, all combined**

- **Economic end point:**

  incremental cost-effectiveness ratio of usual care 3 month follow up and follow up by the network

Clinical End Point
Control of the Asthma

Composite criteria based on the criteria of the Canadian consensus*:

- **Day-time symptoms**
- **Night-time symptoms**
- **Exacerbations of the asthma**
- **Loss of work and absence from school**
- **Consumption of Beta2 mimetic agents CA**
- **Peak Expiratory Flow Rate**

* Boulet et al.:CMAJ 1999.10: S1-S9

Thresholds for Non-Control

Criteria	Canadian Consensus
Day-time symptoms	> 6d /7 d
B_2SA	> 6d /7 d
Night-time symptoms	> 1 night/week
FEV1	< 80 %
Exacerbations	1 since the last consultation or causing the consultation on the day
Loss of work	Yes

Quarterly Evaluation of Control

- State of control/non control was assess for each of the consultations
- The number of consultations with control and without control was counted by quarter
- If the number of non controlled consultations was > than the number of controlled consultations during a quarter $\Rightarrow$ patient is not controlled for the trimester

Treatment of Missing Data

- If one or more of the 6 criteria characterising control is not documented,
- Without one of the thresholds being breached when the other items are completed,
- Then, the patient is assumed to be controlled.

Financial End Point

Community perspective

Direct costs:

hospitalisation, medical consultations, paraclinical investigations, medicinal products

Indirect costs:

losses of production

Economic End Point

Ranking usual care or network management according to the efficiency of follow up over a period of 3 months

$$\frac{\Delta C}{\Delta E} = \frac{C_{AI} - C_{W/O}}{E_{AI} - E_{W/O}}$$

- C_{AI} : Cost of management after intervention
- $C_{W/O}$: Cost of management without intervention
- E : Number of quarterly follow ups with control
- Δ : Incremental cost effectiveness

RESULTS

- **Population**
- **Clinical impact**
- **Financial impact**
- **Economic impact**

POPULATION

Patient Inclusion and Follow Up

On site study: 1st April 1999 – 24 April 2002

- ***Before Phase***

43 Participating doctors

34 Doctors downloaded information

338 Patients included

311 Eligible patients

119 Patients only had 1 inclusion visit before intervention

192 Patients had at least 2 consultations before intervention

- ***After Phase***

115 Patients followed up for 12 months after intervention

Description of the Population n = 311

- 160 men and 150 women, no details on 1
- Mean age 44.4 years ± 2.4 years
  - 10-25 years old : 20.26 %
  - > 60 years old : 30.72 %
- 19% long term sick for chronic respiratory failure (CREDES : 6%), half over 60 years old
- Median length of history of the disease: 14.5 years
- Smokers 20% (= CREDES)
- 1/3 of patients had allergic asthma (according to GP)

Continuous Data Management

- ***1st April 1999 : start of the "before phase"***
  - 1st analysis : November 1999 (n = 114)
  - 2nd analysis : January 2000 (n = 171)
  - 3rd analysis : July 2000 (n = 275)
  - 4th analysis : January 2001 (n = 311)
- ***24 October 2001 : start of the "after phase"***
  - 1st analysis : July 2001 (n = 115)
  - 2nd analysis : January 2002 (n = 115)

CLINICAL IMPACT

Percentages of Controlled Patients in the 1st Quarter Before Intervention and in the 1st Quarter After

1st quarter after / 1st quarter before	Number of patients with controlled asthma	Number of patients with non controlled asthma	**Total**
Number of patients with controlled asthma	20	5	**25**
Number of patients with non controlled asthma	14	16	**30**
Total	**34**	**21**	**55**

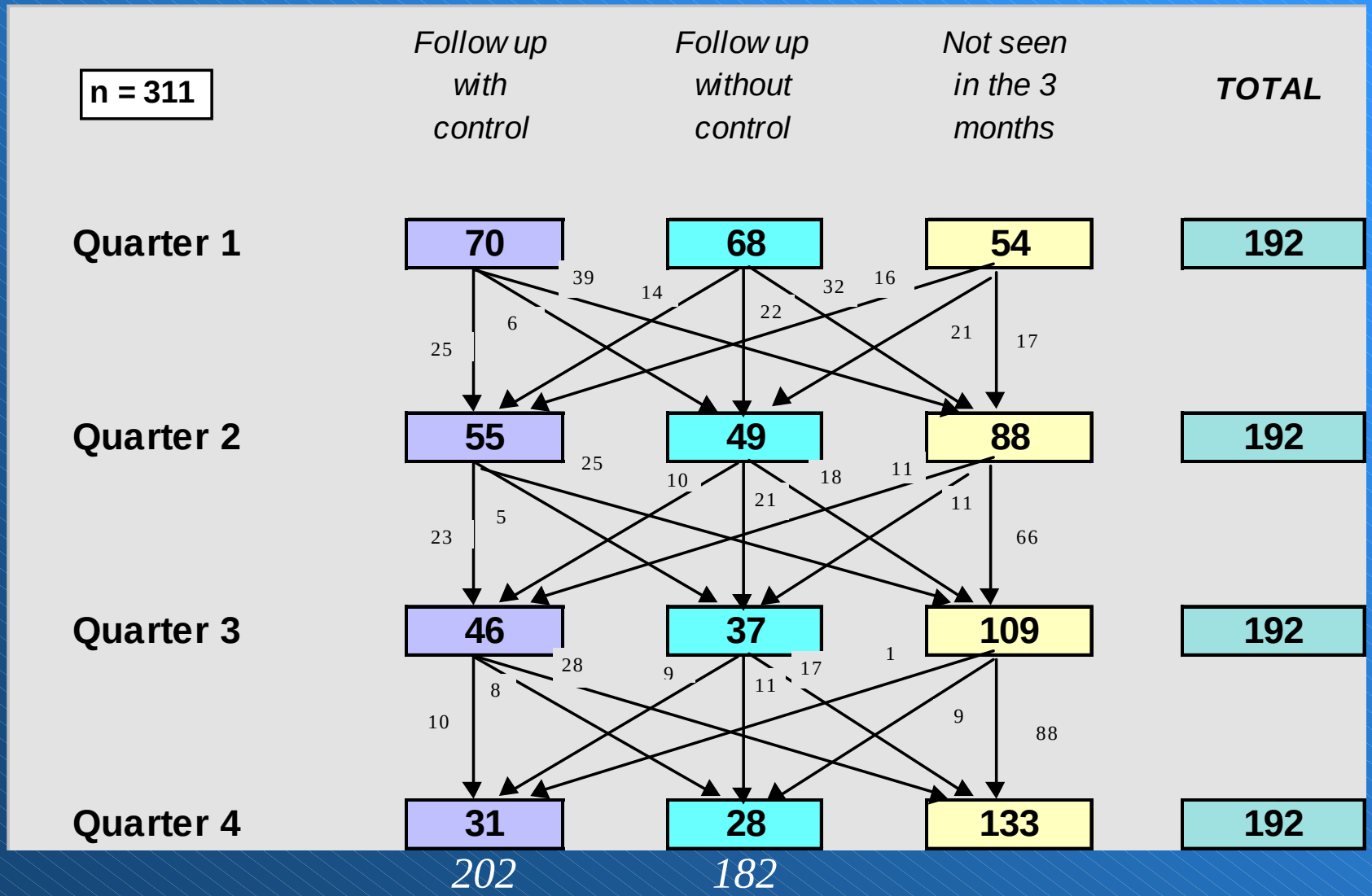
controlled before: 45 %

controlled after: 62 %

P = 0.04

(McNemar test, paired samples)

Outcome of Asthmatic Patients
12 Months Follow Up Before Intervention
 # 192 PATIENTS



Control and Non Control of Patients

Follow Up for 12 months Before Intervention

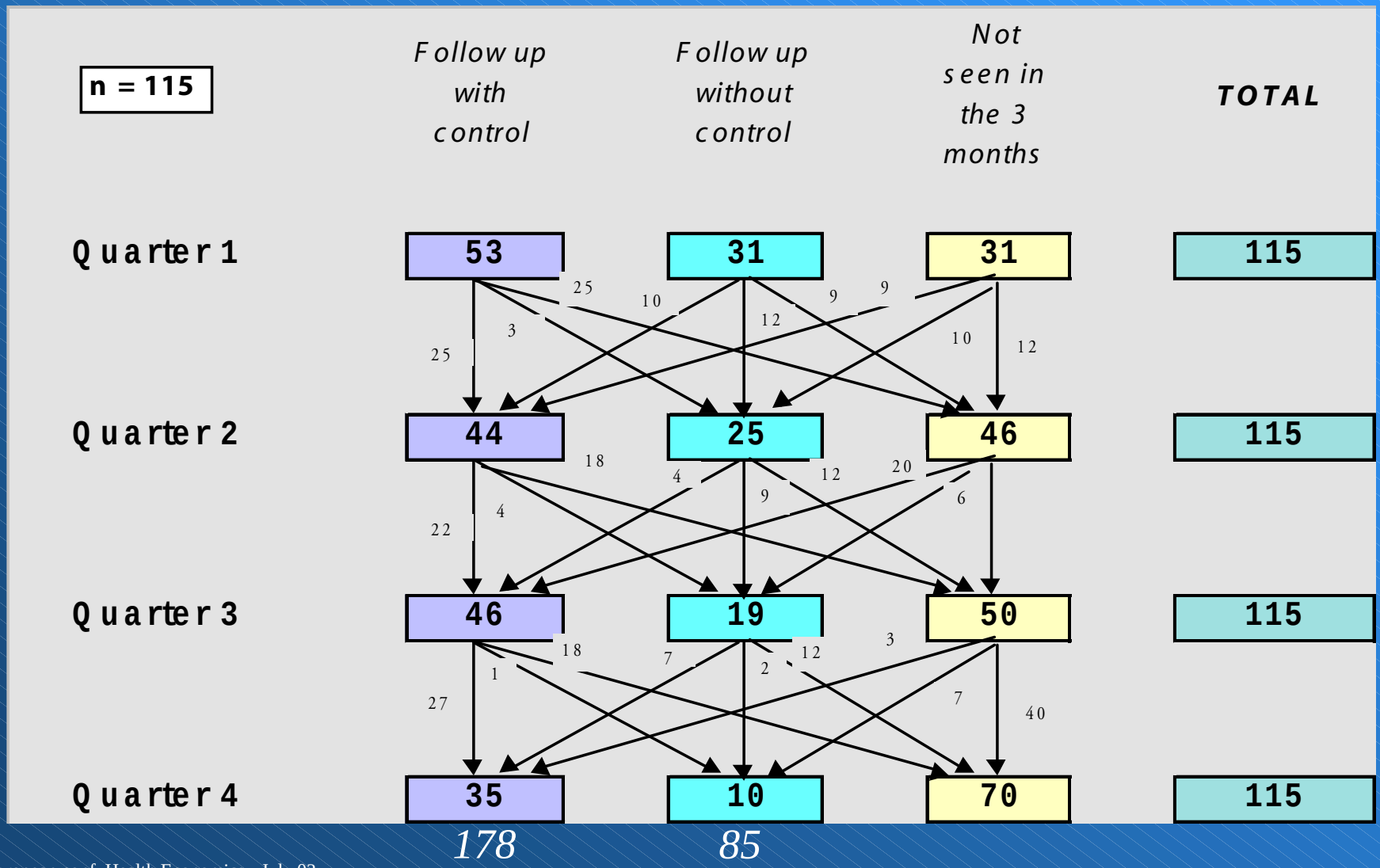
 # 192 PATIENTS

	Follow up with control	Follow up without control	Number of follow up
Before intervention			
Quarter 1	70	68	138
Quarter 2	55	49	104
Quarter 3	46	37	83
Quarter 4	31	28	59
TOTAL patient-quarter follow up	**202**	**182**	**384**

Outcome of Asthmatic Patients

12 Months Follow Up After Intervention

 # 115 PATIENTS



Patient Control and Non Control

Follow Up for 12 Months After Intervention

 # 115 PATIENTS

	Follow up with control	Follow up without control	Number of follow up
After intervention			
Quarter 1	53	31	84
Quarter 2	44	25	69
Quarter 3	46	19	65
Quarter 4	35	10	45
TOTAL patient-quarter follow up	**178**	**85**	**263**

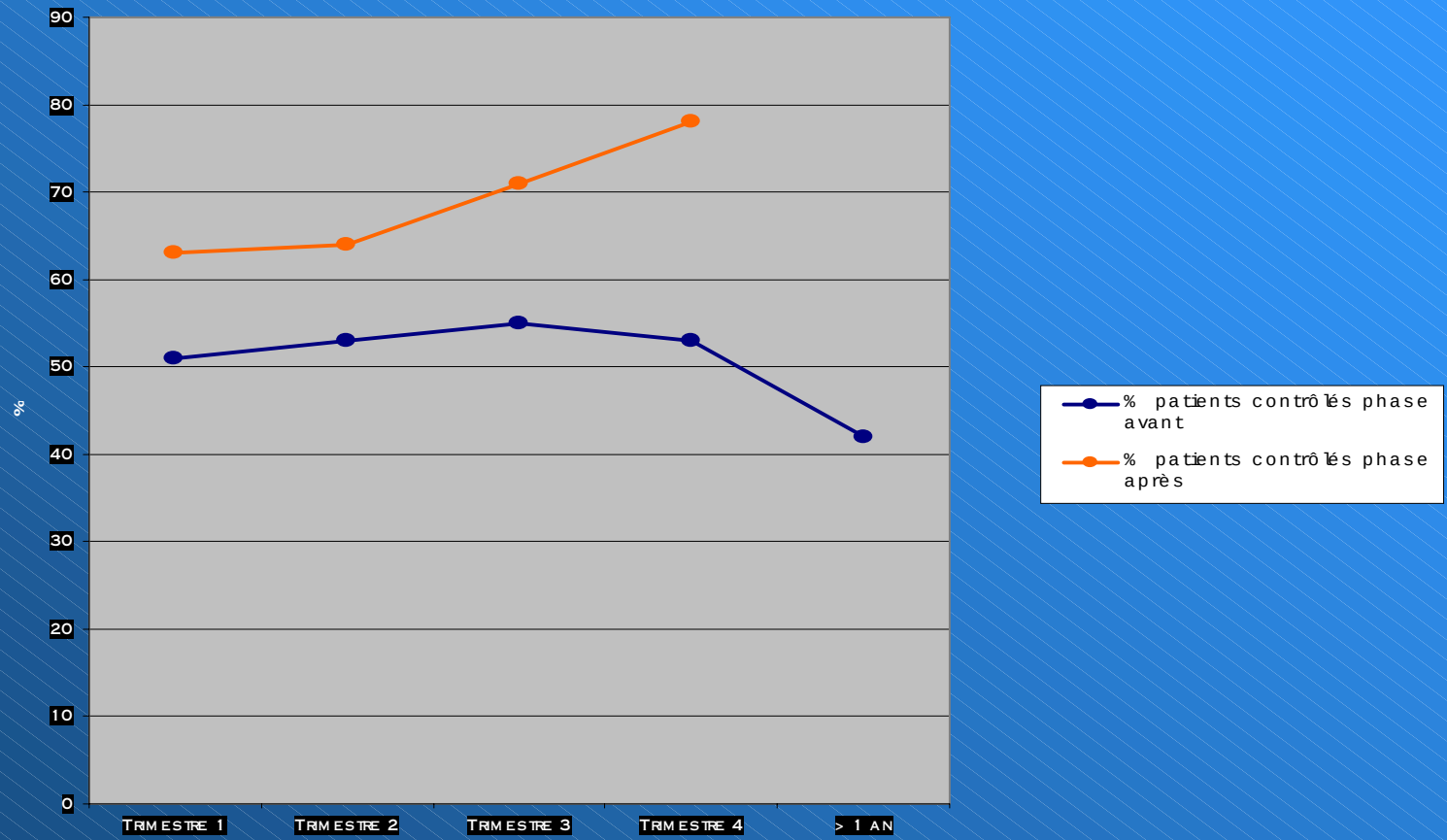
Quarterly Asthma Control Rate 12 Months Before and 12 Months After Intervention

Before 202 : 384 = 52.60

After 178 : 263 = 67.68

Incremental effectiveness = + 15.08 %

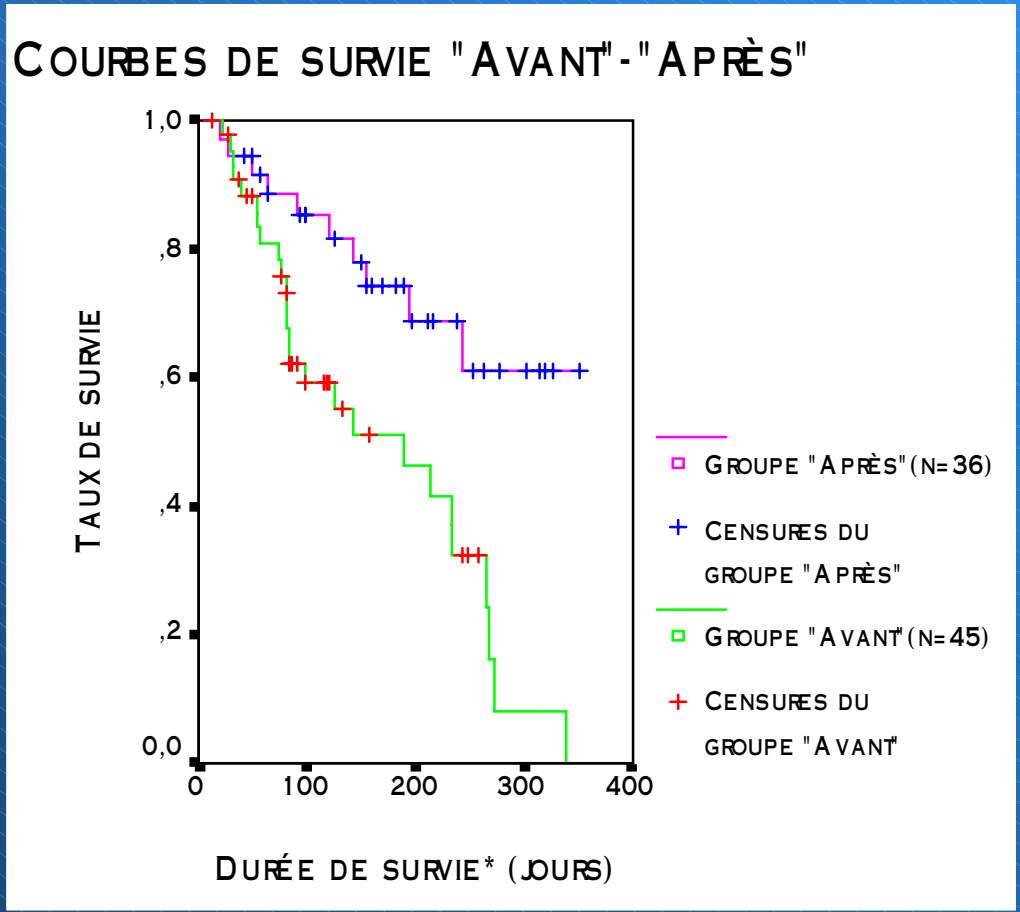
Change in Asthma Control Rate « Before - After » Intervention



Comments:

52.6% of patients controlled (before phase) vs 67.7% (after phase) i.e. a gain in patients controlled per quarter of 15.08 %

Comparison of Time Spent with Controlled Asthma Before and After Intervention



Estimation of median time before becoming non controlled:

Before : 190 days
CI (95%) = [84 , 266]

After : > 352 days
CI (95%) = [243 , .]

P = 0.002

** Survival time (days) = time between first follow up consultation (controlled) and becoming non controlled*

Comparability of « Before - After » Groups Study of Socio-Demographic Characteristics

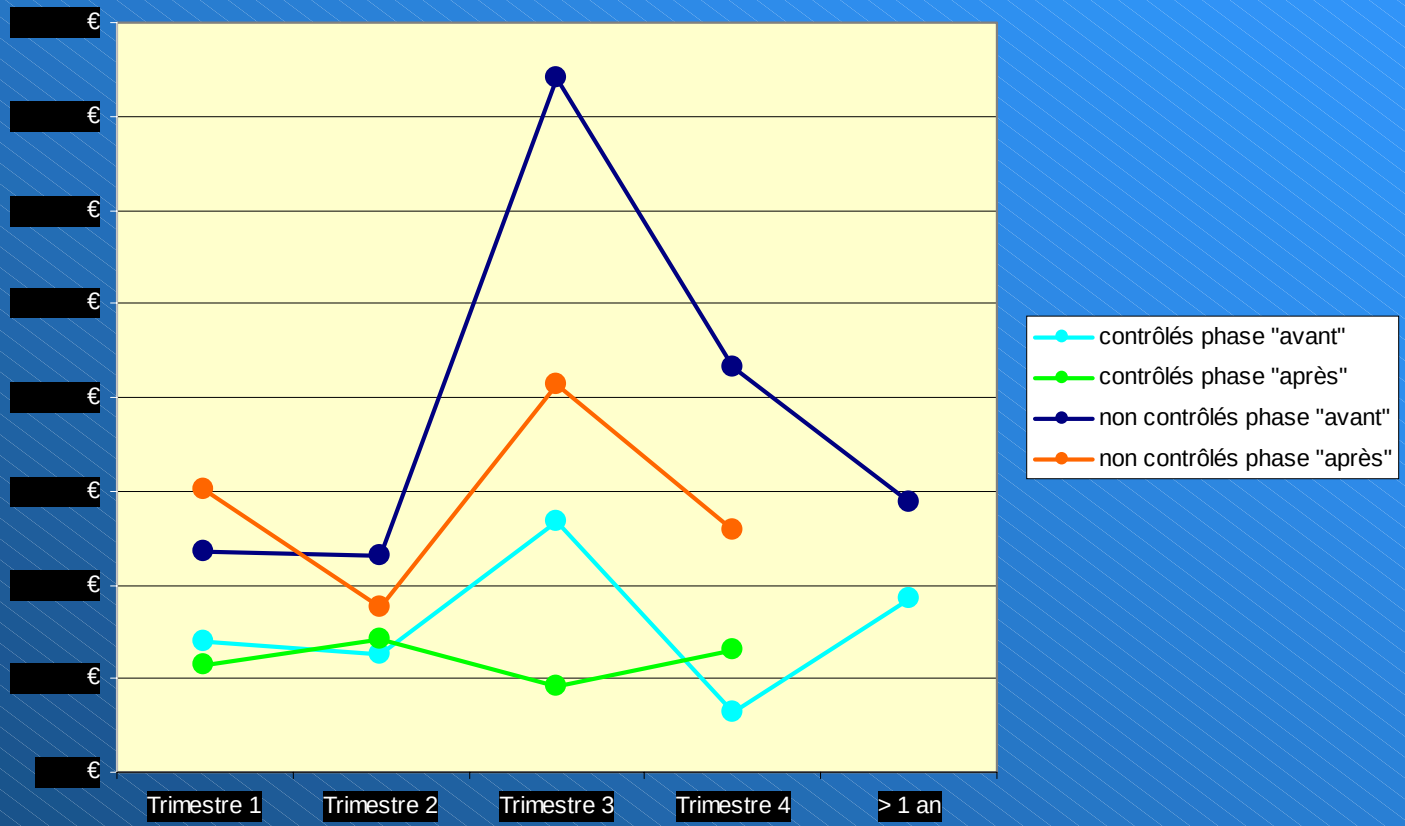
	« Before » Group (n=45)	« After » Group (n=36)	p*
Sex	men: 51 % women: 49 %	men: 58 % women: 42 %	0. 52
Age	41.8 ± 2.9 years	47.5 ± 3.4 years	0. 68
CSP Occupation Health Insurance system			> 0. 30
Length of history of asthma (years)	16.4 ± 1.8 years	14.3 ± 2.4 years	0. 28

**Student test for continuous variables; Chi2 test for qualitative variables*

FINANCIAL IMPACT

Mean Quarterly Cost of Follow Up (€ 2001)

Controlled vs Non Controlled



Comments:

- The cost of a non controlled patient for 1 quarter is always higher than that of a controlled patient.

- Impact of a rare event: hospitalisation in cost variability.

- The mean cost per quarter in the before phase is higher than in the after phase both in controlled and in non-controlled patients.

Comparison of Quarterly costs « Before-After » ($€_{2001}$)

All Statuses Combined

Nature of Consumption	Follow up After Intervention n = 384	Follow up after intervention n = 263
Total costs	255,2	172,2
Direct costs	250,7	162,3
Medical costs	31,2	31,0
Drug costs (all)	92,5	103,0
Anti-asthma drug costs	82,0	92,8
Hospital costs	81,8	24,7
Investigation costs	45,3	3,6
Indirect costs	4,5	9,9

Comments:

Reduction in total costs of 83 € per patient per quarter

Large reduction in hospital cost : 57 € per patient per quarter

ECONOMIC IMPACT

Incremental Cost Effectiveness Ratio of Follow up of Asthma for 3 Months Before and After Intervention

$$\frac{IC}{IE} = \frac{172.13\ € - 255.23\ €}{67.7\ \% - 52.6\ \%} = \frac{-81.10\ €}{+15.08\ \%}\ (-32.4\ \%)$$

- 172.13 € : Cost of 3 months follow up after intervention
- 255.23 € : Cost of 3 months follow up without intervention
- 67.7 : Rate of follow ups with control over 3 month period after intervention
- 52.6 : Rate of follow ups with control over 3 month period before intervention

Conclusion 1/2

- Change in state of health in the RESALIS* cohort, one year after introducing the network
  - **15% gain in patients whose asthma was controlled over a period of one quarter one year after introducing the network**
    - 52.6% of patients controlled over a quarter in the Before Network phase
    - 67.7% of patients controlled over a quarter in the Network phase

⇒ **Positive initial results for the network in terms of improvement of patient ’s state of health**

** to be compared subsequently to the « others » group*

Conclusion 2/2

- Changes in cost for the RESALIS* cohort, one year after introducing the network
  - **Fall in total quarterly patient cost of 83 €:**
    - Totally quarterly cost per patient in the before phase 255.2 €
    - Total quarterly cost per patient in the network phase: 172.2 €
  - the cost incurred by a controlled patient is invariably less than that incurred by a non-controlled patient

⇒ **Positive initial results for the network in terms of reduced cost**