EUBIROD

EUropean Best Information through Regional Outcomes in Diabetes

Materials, Methods and Data Analysis of Diabetes Registers

The Diabetes Register of West Friesland, The Netherlands

Fred Storms
CBO, NL

Special BIRO Academy Meeting
"Coordinated Information Delivery from Diabetes Registers to improve quality and outcomes in Europe"
Rome 4-5th June 2010

Directorate-General for Health & Consumers

Executive Agency for Health and Consumers

West Friesland, the Netherlands
Reference Population

Country: the Netherlands
Region: West Friesland
Total Population: 330.000
Diabetes Prevalence: 4,2%
Type of Data Sources: Centralized Surveillance System, clinical

N.Participating Centres: 75

Extraction of regional database

West Friesland, the Netherlands
Reference Diabetes Data

Year: **2009**
Region: West Friesland
Total N. Subjects: 4874
Total N.Episodes: 4874
•T1: N(%) 0 (0%)
•T2: N (%) 4874 (100%)

Diabetes Zorgsysteem West-Friesland

West Friesland, the Netherlands

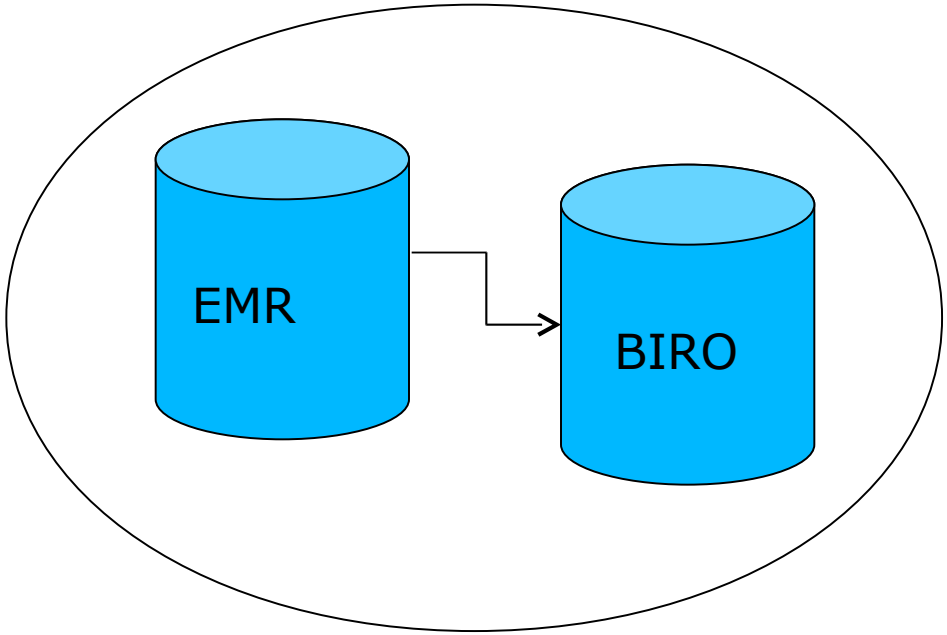
Local Database Structure

Central clinical annual check for all type 2 diabetics
In one central place
Electronical Medical Record
Extraction from EMR

Diabetes Zorgsysteem West-Friesland

West Friesland, the Netherlands

Local Database Structure: IT



Research/service centrum
Primary Care
85% Family Physicians
Catchment of area 70%
Supported by the University of Amsterdam
Local committee for privacy
Includes advice, training and service by specialized nurses and dieticians
Cooperation with local hospital

West Friesland, the Netherlands
Using BIRO

- Problems/Weaknesses
  - Consistency of database e.g. date format
  - Difficult to get medication in
  - Definitions
  - Not as easy as it looks
- Strengths
  - Works properly when csv file is exported from annual excel file export
  - BIRO system gives good explanation of problems that can be solved then

West Friesland, the Netherlands
Merge Table Contents

Black = avail. Green = next year Grey not av.

Patient ID
Data Source ID
Type Of Diabetes
Sex
Date of Birth
Date of Diagnosis
Episode Date
Smoking Status
Cigarettes per day
Foot Examination

Alcohol Intake
Weight
Height
Body Mass Index
Systolic Blood Pressure
Diastolic Blood Pressure
HbA1c
Creatinine
Microalbumin

Total Cholesterol
HDL
Triglycerides
Eye Examination
Retinopathy Status
Maculopathy Status
Foot Pulses
Foot Sensation
Nasal Therapy
Average Injections
Self Monitoring
Diabetes Specific Education
Lipid Lowering Therapy
Anti-platelet Therapy
Patient Enrolment in DMP

End Stage Renal Therapy
Renal Dialysis
Renal Transplant
Stroke
Active Foot Ulcer
Myocardial Infarction
Laser
Hypertension
Blindness
Amputation
Antihypertensive Medication
Hypoglycemic Drug Therapy
Oral Drug Therapy
Pump Therapy

West Friesland, the Neterherlands
Additional Data

Activity Table:

Complete

Population Table:

Available but not complete

Diabetic Population Table:

From system

West Friesland, the Netherlands
Running BIRO: Data Quality Results

Merge table

merge_table

ds_id	record_id	patient_id	dob	dt_diag	pat_id	sex	type_dm	bmi	creat	dbp
1	1	50024	1926-12-13	1926-12-13	50024	2	2	23	97	110
1	2	50740	1955-10-14	1955-10-14	50740	1	2	29	70	90
1	3	50823	1947-01-23	1947-01-23	50823	1	2	36.4	78	75
1	4	51919	1939-09-08	1939-09-08	51919	1	2	30.1	104	79
1	5	52979	1924-12-24	1924-12-24	52979	2	2	25.7	92	66
1	6	53032	1944-04-09	1944-04-09	53032	1	2	27.9	91	81
1	7	53071	1942-01-09	1942-01-09	53071	2	2	34.6	86	72
1	8	54741	1961-08-10	1961-08-10	54741	1	2	27.5	85	78
1	9	55536	1943-06-12	1943-06-12	55536	2	2	21.3	61	60
1	10	55848	1950-09-04	1950-09-04	55848	1	2	29	74	70
1	11	56004	1946-08-12	1946-08-12	56004	2	2	38.2	77	73
1	12	56058	1947-04-18	1947-04-18	56058	2	2	22.9	65	92
1	13	56064	1934-02-21	1934-02-21	56064	1	2	24.2	110	66
1	14	56926	1950-04-10	1950-04-10	56926	1	2	27.1	105	88
1	15	57616	1934-05-13	1934-05-13	57616	1	2	26.9	96	75
1	16	57680	1952-11-20	1952-11-20	57680	1	2	27.3	93	80
1	17	58459	1972-07-15	1972-07-15	58459	1	2	33.9	71	69
1	18	50596	1952-07-04	1952-07-04	50596	2	2	39.9	74	68
1	19	50963	1945-05-29	1945-05-29	50963	1	2	27.3	103	85
1	20	51647	1968-10-01	1968-10-01	51647	2	2	37.8	58	84
1	21	52322	1937-04-04	1937-04-04	52322	2	2	44.5	56	91
1	22	53634	1928-10-31	1928-10-31	53634	2	2	45.1	77	85
1	23	53846	1929-10-08	1929-10-08	53846	1	2	24.9	116	98

Validity Check

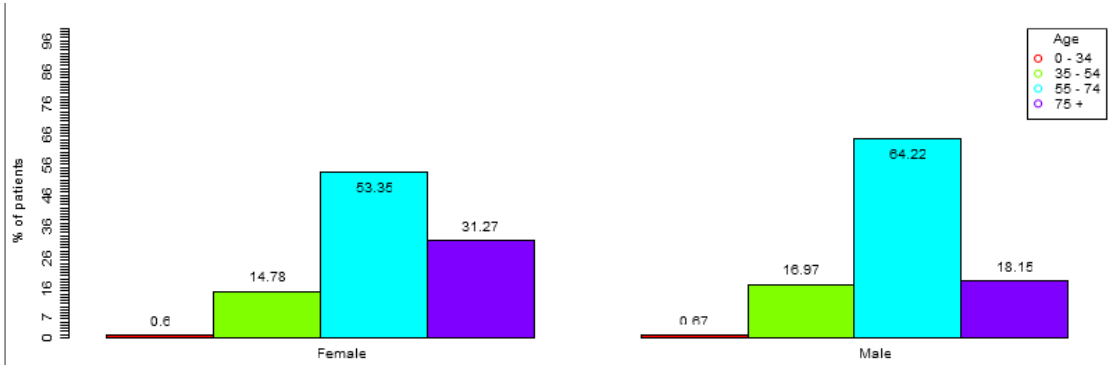
C:/Program Files/BIRO/soft...

Distribution of missing values:
bmi: 6 (0.12%)
chol: 6 (0.12%)
creat: 6 (0.12%)
dbp: 6 (0.12%)
dob: 6 (0.12%)
dt_diag: 6 (0.12%)
epi_date: 6 (0.12%)
hba1c: 6 (0.12%)
hdl: 6 (0.12%)
height: 6 (0.12%)
ldl: 6 (0.12%)
lipid_therapy: 2 (0.04%)
pat_id: 6 (0.12%)
sbp: 6 (0.12%)
sex: 6 (0.12%)
smok_stat: 163 (3.34%)
tg: 6 (0.12%)
type_dm: 6 (0.12%)
weight: 6 (0.12%)

Distribution of values with incorrect format:
chol: 164 (3.36%)
creat: 172 (3.52%)
dbp: 71 (1.45%)
hba1c: 125 (2.56%)
hdl: 170 (3.48%)
height: 331 (6.78%)
ldl: 173 (3.55%)
sbp: 71 (1.45%)
tg: 168 (3.44%)
weight: 17 (0.35%)

Distribution of out of range values:
chol: 6 (0.12%)
hba1c: 4 (0.08%)
hdl: 12 (0.25%)
ldl: 26 (0.53%)

West Friesland, the Netherlands
Statistical Report: General Characteristics



BIRO Report site: 13 , 28 May 2010

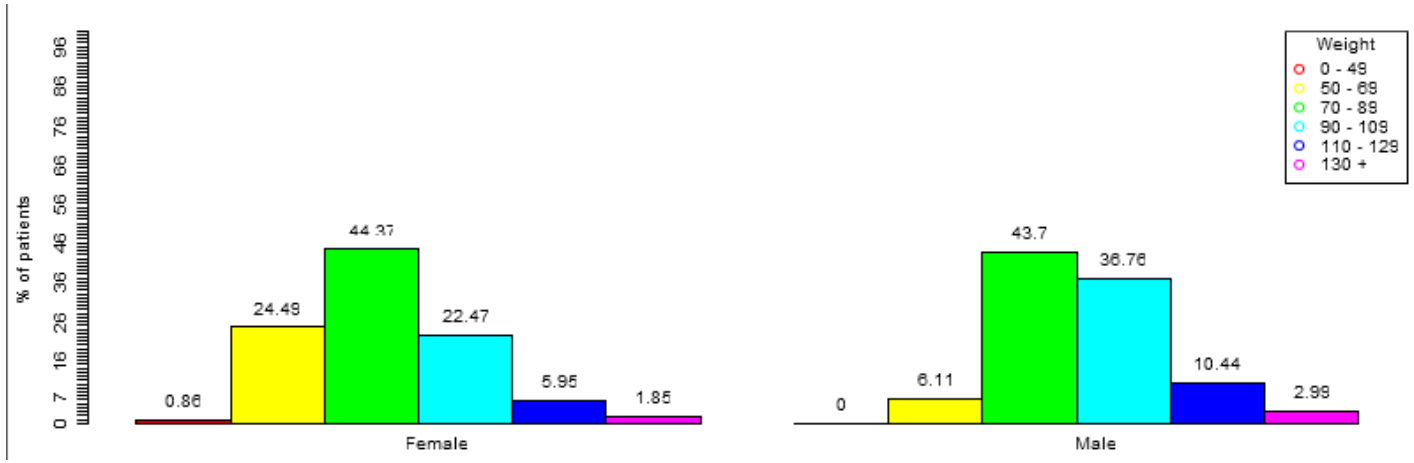
Reference date: 31/12/09

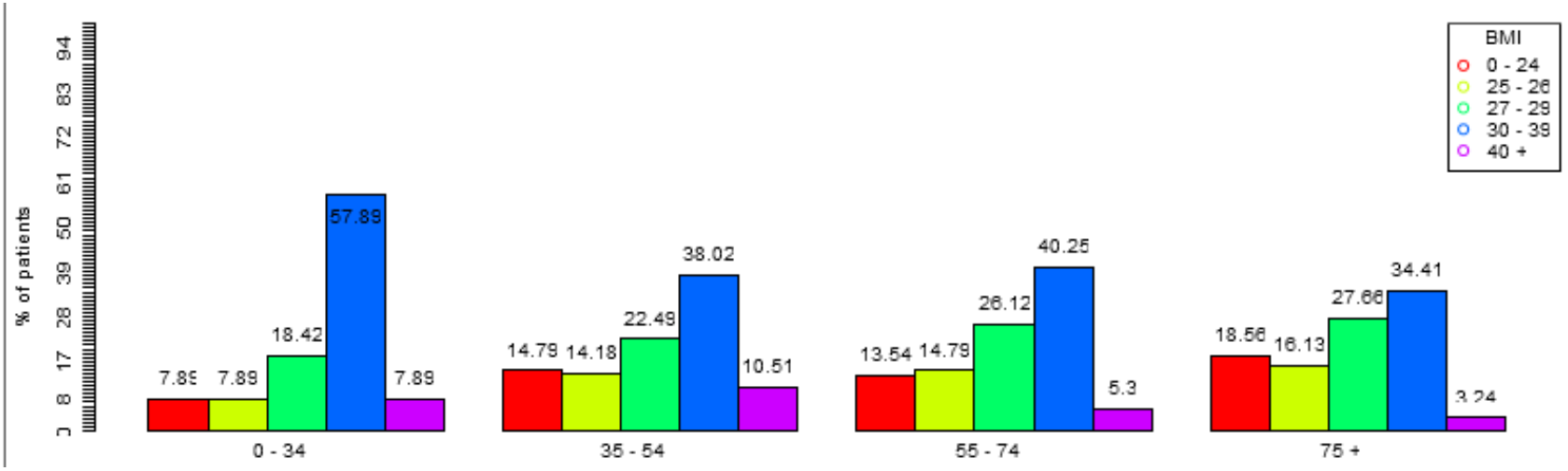
Parameter: 2.1.2. Duration of diabetes (Classes)

HbA1c done	Type 2						
	0 - 9		10 - 19		20 +		
	Female	Male	Female	Male	Female	Male	
Yes	1 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	2280 (97.98 %)	2464 (96.78 %)	4745 (97.35 %)
No	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	47 (2.02 %)	82 (3.22 %)	129 (2.65 %)
	1 (0.02 %)	0 (0 %)	0 (0 %)	0 (0 %)	2327 (47.74 %)	2546 (52.24 %)	4874 (100 %)

West Friesland, the Netherlands

Statistical Report: General Charact. (Weight/BMI)

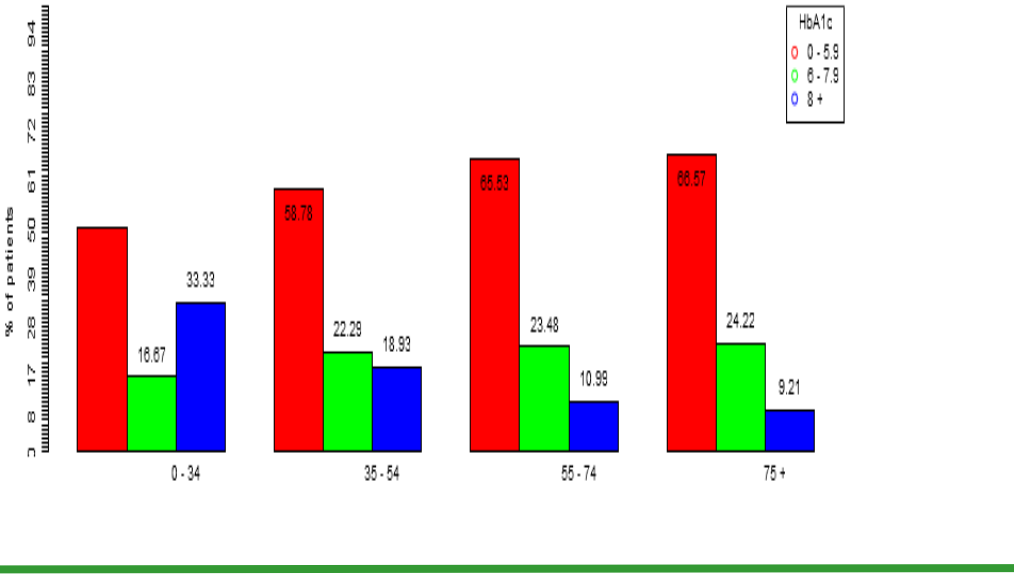


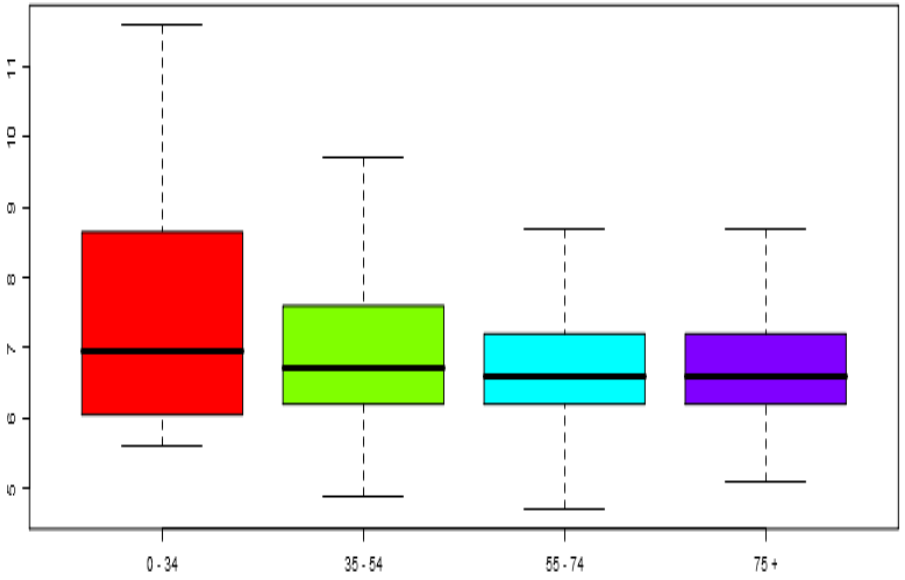


West Friesland, the Netherlands
Statistical Results: BIRO Indicators (HbA1c)

Parameter: 2.2.3.6. HbA1c (the most recent episode in 12 months)

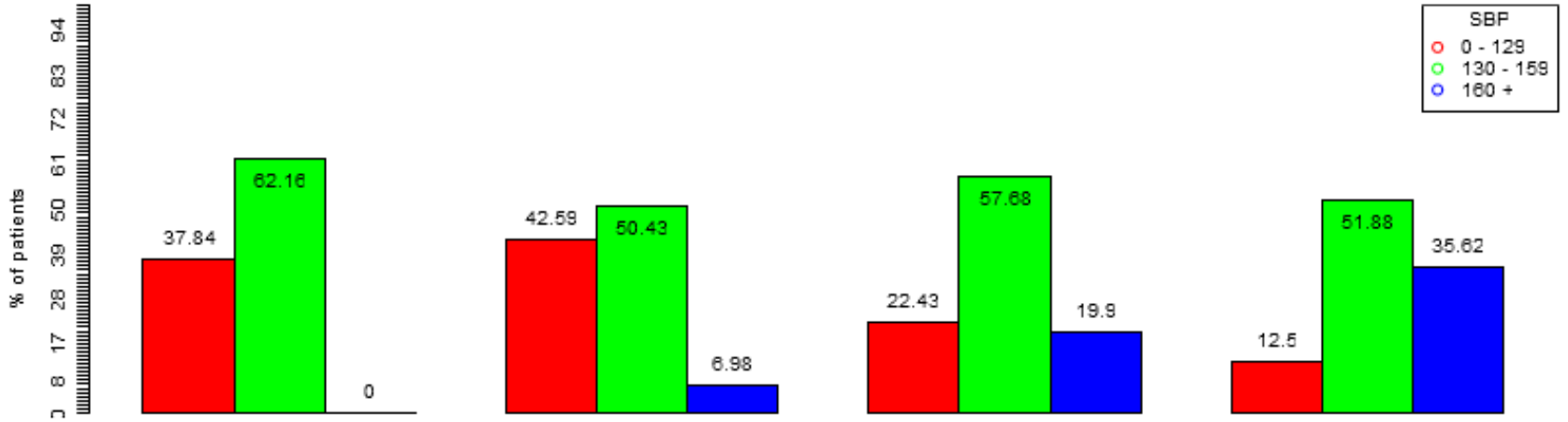
HbA1c	Type 2								
	0 - 34		35 - 54		55 - 74		75 +		
	Female	Male	Female	Male	Female	Male	Female	Male	
0 - 5.9	13 (81.25 %)	5 (25.00 %)	223 (63.17 %)	249 (55.33 %)	813 (65.88 %)	1035 (65.26 %)	448 (66.08 %)	275 (67.40 %)	3061 (64.51 %)
6 - 7.9	0 (0.00 %)	6 (30.00 %)	74 (20.96 %)	105 (23.33 %)	296 (23.99 %)	366 (23.08 %)	163 (24.04 %)	100 (24.51 %)	1110 (23.39 %)
8 +	3 (18.75 %)	9 (45.00 %)	56 (15.86 %)	96 (21.33 %)	125 (10.13 %)	185 (11.66 %)	67 (9.88 %)	33 (8.09 %)	574 (12.1 %)
	16 (0.34 %)	20 (0.42 %)	353 (7.44 %)	450 (9.48 %)	1234 (26.01 %)	1586 (33.42 %)	678 (14.29 %)	408 (8.6 %)	4745 (100 %)

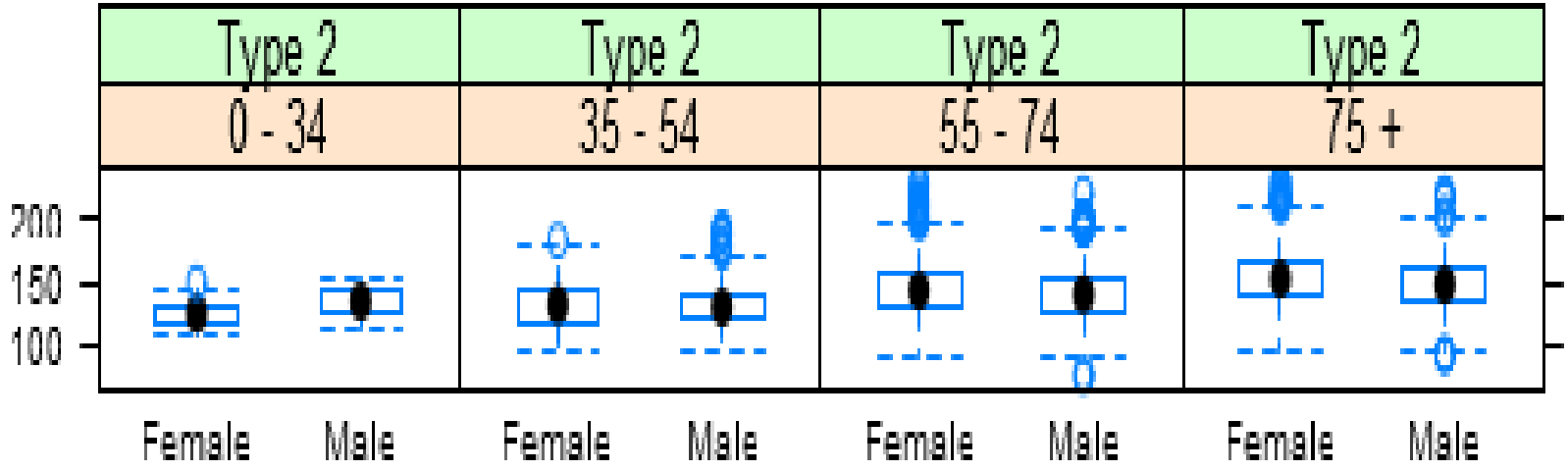




West Friesland, the Netherlands

Statistical Report: BIRO Indicators (SBP)





West Friesland, the Netherlands
Conclusions (1): Statistical Results

- Outputs are usefull and quite comprehensive
- Techicalities improved enormously since Kuwait version of BiroBox
- Standard output of West Friesland system is not sufficiently compatible with Biro System
- Adjustments should be made explicitly for Biro

West Friesland, the Netherlands
Conclusions (2): Diabetes Care

- Diabete Care is well organised, process is almost perfect
- Outcome has to gain in blood pressure, maybe HbA1c in the elderly and lipids
- Regional catchment of diabetic population in system should grow, and is growing

West Friesland, the Netherlands
Conclusions (3):BIRO usage

- The Excel export database was a good starting point for a csv file after flaws in format of the data were corrected
- The csv file gave no major problems.
- Compatibility of definitions of system and Biro not perfect
- Annual export no problem

West Friesland, the Netherlands
Future LOCAL Perspectives

- The export database is not optimal for the BIRO format
- Many more data are available and usefull for Biro, e.g. medication
- In the Netherlands we plan to start a national server, including 4 more regions to start with and later up to 200 primary care local cooperations for diabetes care.

West Friesland, the Netherlands
Future BIRO Perspectives

- Biro system database should be adjusted implementing more data on social and emotional situation
- Set up of national dataservers
- Reporting national/international
- Work hard on national policy makers after first report is published
- Try to influence Brussels and Luxembourg to get politicians using the system

West Friesland and CBO, the Netherlands

Thanks for your attention

Diabetes Zorgsysteem West-Friesland