

Optimizing EUBIROD reports for routine clinical practice

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Why we need information?

- To make decisions
- To know expected outcomes
- To inform patients
- To evaluate performance

Comparability of data

Data not numbers



Core Standards of the EUBIROD Project*

Defining a European Diabetes Data Dictionary for Clinical Audit and Healthcare Delivery

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aim

to define a robust European data dictionary with appropriate clinical definitions that can be used to analyse diabetes outcomes and provide the foundation for data collection from existing electronic health records for diabetes

Table 3 The EUBIROD framework of diabetes indicators (ToD = type of diabetes, CAge = age classes, R = region)

Section/subsection			Ref.	Indicator	Strata	
1 Demographic characteristics	1.1 Basic demographics		1.1.1	Age (classes) * Gender [adult, pediatric]	DS	
2 Clinical characteristics	2.1 Diabetes status		2.1.1	Type of diabetes [adult, pediatric]	CAge,DS	
			2.1.2	Duration of diabetes (classes) [adult, pediatric]	ToD, gender, DS	
	2.2 Risk factors for diabetes complications	2.2.1 Obesity and Growth (most recent value in the last 12 months)	2.2.1.1	Weight (classes and continuous)	ToD, gender, CAge, DS	
			2.2.1.2	BMI (classes and continuous) [adult, pediatric]	ToD, gender, CAge, R	
			2.2.1.3	Height (classes) [pediatric]	ToD, R	
		2.2.2 Lifestyle		2.2.2.1	Smoking status	ToD, gender, CAge, R
		2.2.3 Clinical measurements (most recent value in the last 12 months)	2.2.3.1	Systolic blood pressure (classes and continuous)	ToD, gender, CAge, R	
			2.2.3.2	Diastolic blood pressure (classes and continuous)	ToD, gender, CAge, R	
			2.2.3.3	Total cholesterol (classes and continuous)	ToD, gender, CAge, R	
			2.2.3.4	HDL-cholesterol (classes and continuous)	ToD, gender, CAge, R	
			2.2.3.5	Creatinine (classes and continuous)	ToD, gender, CAge, R	
			2.2.3.6	HbA1c (classes and continuous) [adult, pediatric]	ToD, gender, CAge, R	
	2.3 Diabetes complications		2.3.1	Retinopathy	Cl. D duration, R	
			2.3.2	End stage renal failure	Cl. D duration, R	
			2.3.3	Foot ulcer	Cl. D duration, R	
			2.3.4	Lower extremity amputation	Cl. D duration, R	
			2.3.5	Stroke	Cl. D duration, R	
2.3.6			Myocardial infarction	Cl. D duration, R		
2.3.7			Hypertension	Cl. D duration, R		

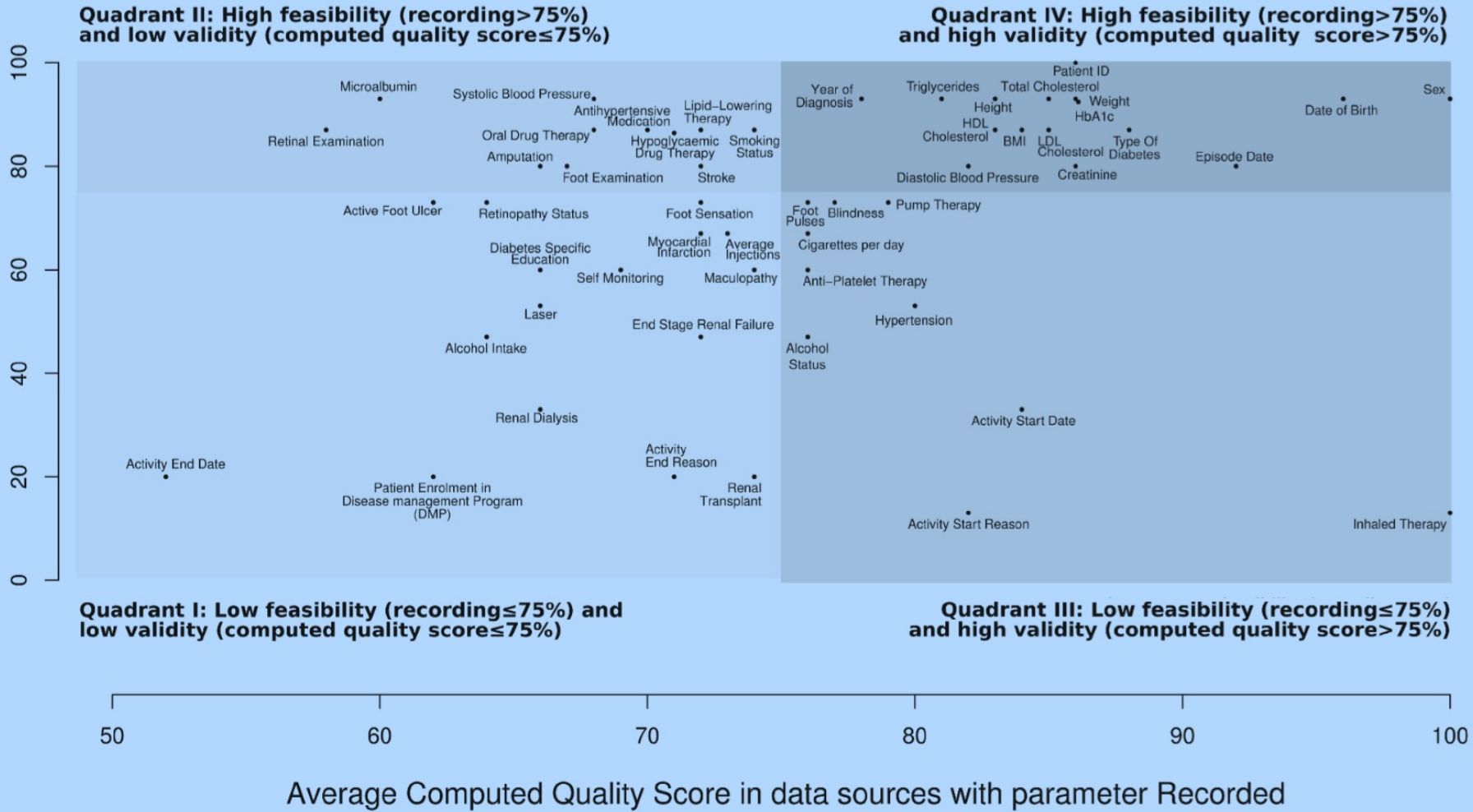
3 Health system	3.1 Structure (provider level)		3.1.1	Type of provider	
			3.1.2	Average diabetes population per region	ToD, gender, CAge
	3.2 Structural quality		3.2.1	Hospital beds per 100,000 population	R
			3.2.2	Physicians employed per 100,000 population	R
	3.3 Processes	3.3.1 Foot examination	3.3.1.1	Examination done	ToD, cage, R
		3.3.2 Eye examination	3.3.2.1	Examination done	ToD, cage, R
		3.3.3 Measurement done (in the last 12 months)	3.3.3.1	Blood pressure	ToD, cage, R
			3.3.3.2	Lipids	ToD, cage, R
			3.3.3.3	Microalbumin	ToD, cage, R
			3.3.3.4	HbA1c	ToD, Cage, R
		3.3.4 Treatment (at least one prescription in the last 12 months)	3.3.4.1	Antihypertensive medication	ToD, Cage, R
			3.3.4.2	Lipid lowering treatment	ToD, Cage, R
			3.3.4.3	Antiplatelet treatment	ToD, Cage, R
			3.3.4.4.1	Glucose lowering: diet only	ToD, Cage, R
			3.3.4.4.2	Glucose lowering: tablets only (oral drug therapy)	ToD, Cage, R
			3.3.4.4.3	Glucose lowering: insulin only	ToD, Cage, R
			3.3.4.4.4	Glucose lowering: insulin and tablets	ToD, Cage, R
			3.3.4.4.5	Glucose lowering: insulin pump	ToD, Cage, R
		3.3.5 Management	3.3.5.1	Self-monitoring	ToD, Cage, R
			3.3.5.2	Percentage with more than one visit on record	ToD, Cage, R

Section/subsection		Ref.	Indicator	Strata
4 Population	4.1 Area level	4.1.1	Total population	Cage, R
		4.1.2	Life expectancy	Cage, R
		4.1.3	Mortality	Cage, R
5 Risk adjusted indicators*	5.1 Epidemiology	5.1.1	Prevalence of diabetes mellitus per 1,000	Region
		5.1.2	Age at diagnosis by 10-year age bands**	ToD, gender, cage, R
	5.2 Process quality (in adults with diabetes in the last 12 months)	5.2.1	Percentage with one or more HbA1c tests	ToD, R
		5.2.2	Percentage with at least one test for microalbuminuria	ToD, R
		5.2.3	Percentage with dilated eye examination or evaluation of retinal photography by trained caregiver	ToD, R
		5.2.4	Percentage receiving at least one examination of the feet	ToD, R
		5.2.5	Percentage with smoking status ascertained and documented	ToD, R
		5.2.6	Percentage with one or more serum creatinine measurements	ToD, R
		5.2.7	Percentage with one or more valid blood pressure measurements	ToD, R
		5.2.8	Percentage with hypertension who receive anti-hypertensive medication	ToD, R
		5.2.9	Percentage with oral therapy (by type)	ToD, R
		5.2.10	Percentage treated with insulin	ToD, R
		5.2.11	Percentage treated with insulin and OADs	ToD, R
		5.2.12	Percentage treated with insulin pump therapy	ToD, R
		5.2.13	Percentage with anti hypertensive treatment	ToD, R
		5.2.14	Percentage with lipid lowering treatment	ToD, R
		5.2.15	Percentage with anti platelet treatment	ToD, R
		5.2.16	Percentage performing self-monitoring of blood glucose	ToD, R
	5.3 Outcome quality: intermediate outcomes (in adults with diabetes in the last 12 months)	5.3.1	Percentage with most recent HbA1c level >9.0%	ToD, R
		5.3.2	Percentage with most recent HbA1c level >7,5%	ToD, R
		5.3.3	Percentage with most recent blood pressure less than 140/90 mmHg	ToD, R
		5.3.4	Percentage with most recent BMI > 30	ToD, R
		5.3.5	Percentage with abnormal microalbuminuria (among those tested)	ToD, R
		5.3.6	Rates of current smokers	ToD, R
		5.3.7	Rates of foot ulceration	ToD, R
	5.4 Outcome quality: terminal outcomes (in the last 12 months)	5.4.1	Annual incidence of dialysis and/or transplant in adults with diabetes	ToD, R
		5.4.2	End stage renal failure in adults with diabetes	ToD, R
		5.4.3	Annual death rate per 100,000 in the general population, for all causes and for those having diabetes as primary/secondary cause of death***	Region

Recorded	Yes/no
Mandatory	Mandatory/routine
Consistency	<p>Consistency with EUBIROD definition</p> <ul style="list-style-type: none"> ● High: Exact match ● Medium: Minor discrepancy – e.g. Source units require mapping ● Low: Major discrepancy – e.g. mapping unavailable ● Data Item Unavailable
Completeness	<p>Expressed as a percentage</p> <ul style="list-style-type: none"> ● 0–100%
Overall Quality Score	<p>A value judgement on the ability for the data source to provide complete and consistent data in line with the definition</p> <ul style="list-style-type: none"> ● High: Can provide complete and consistent data ● Medium: Minor completeness and consistency issues ● Low: Major completeness and consistency issues ● Data Item Unavailable
Comments	Describes any further information known about the data item at source that may affect longitudinal analysis or data presentation.

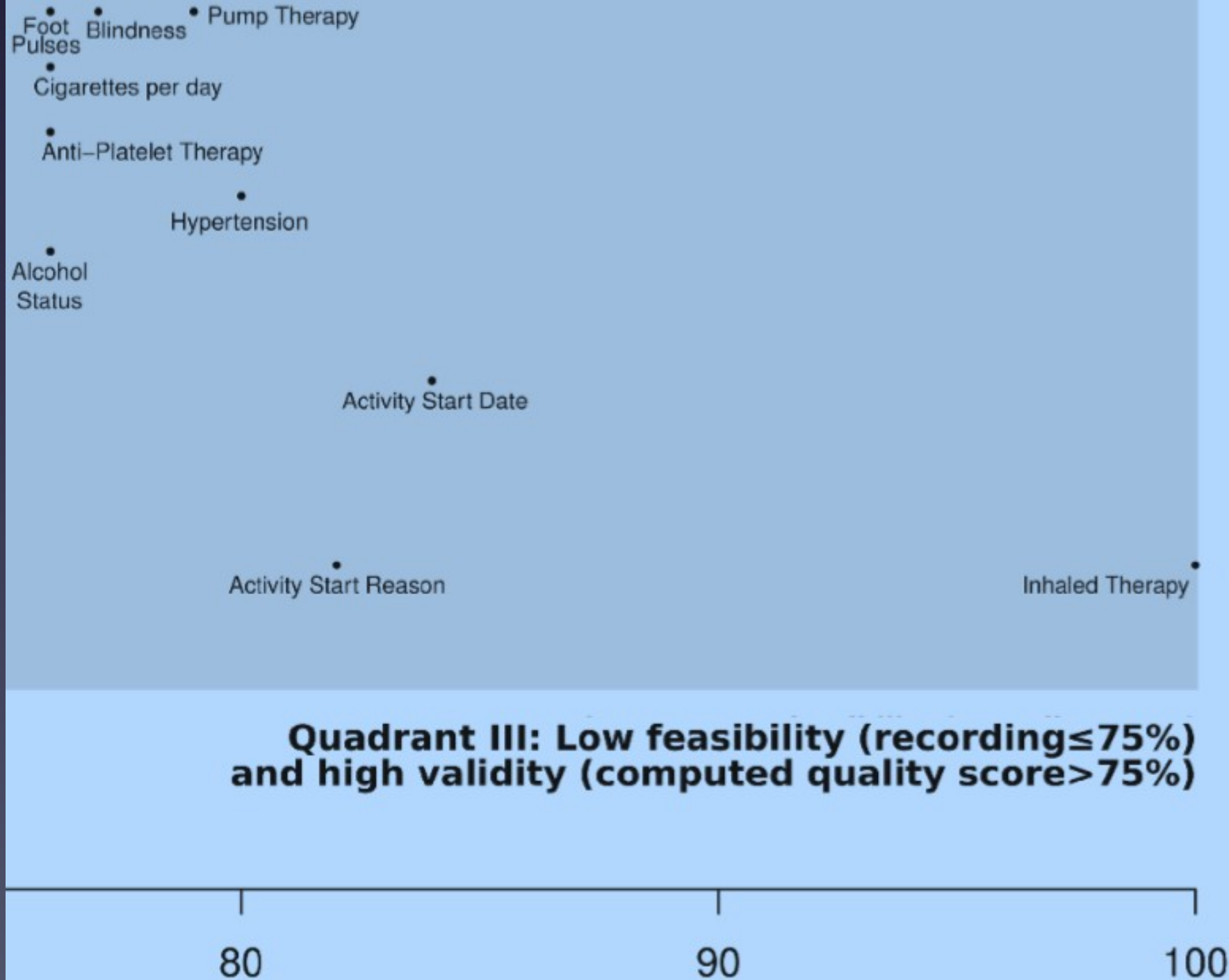
Bivariate distribution of BIRO data items by quality score and percentage of data sources with parameter recorded

Percentage of data sources with parameter Recorded

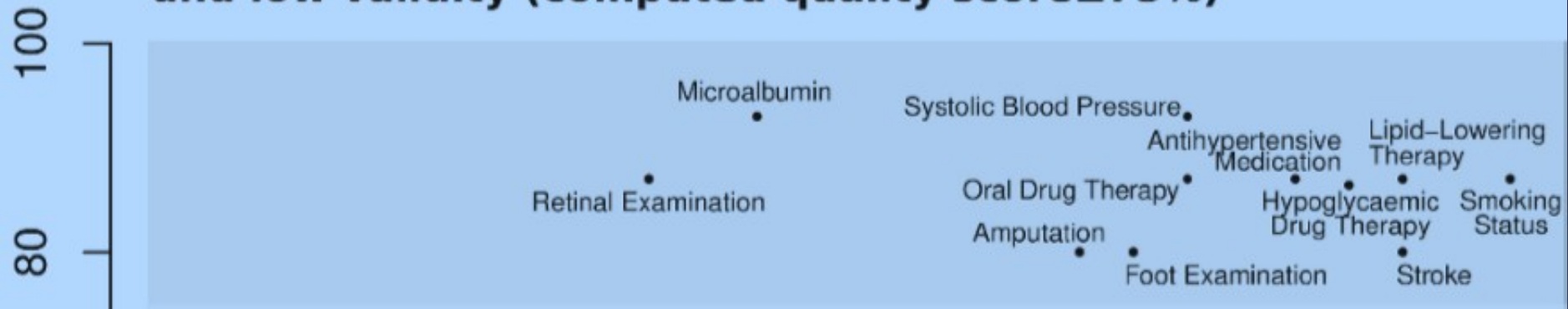


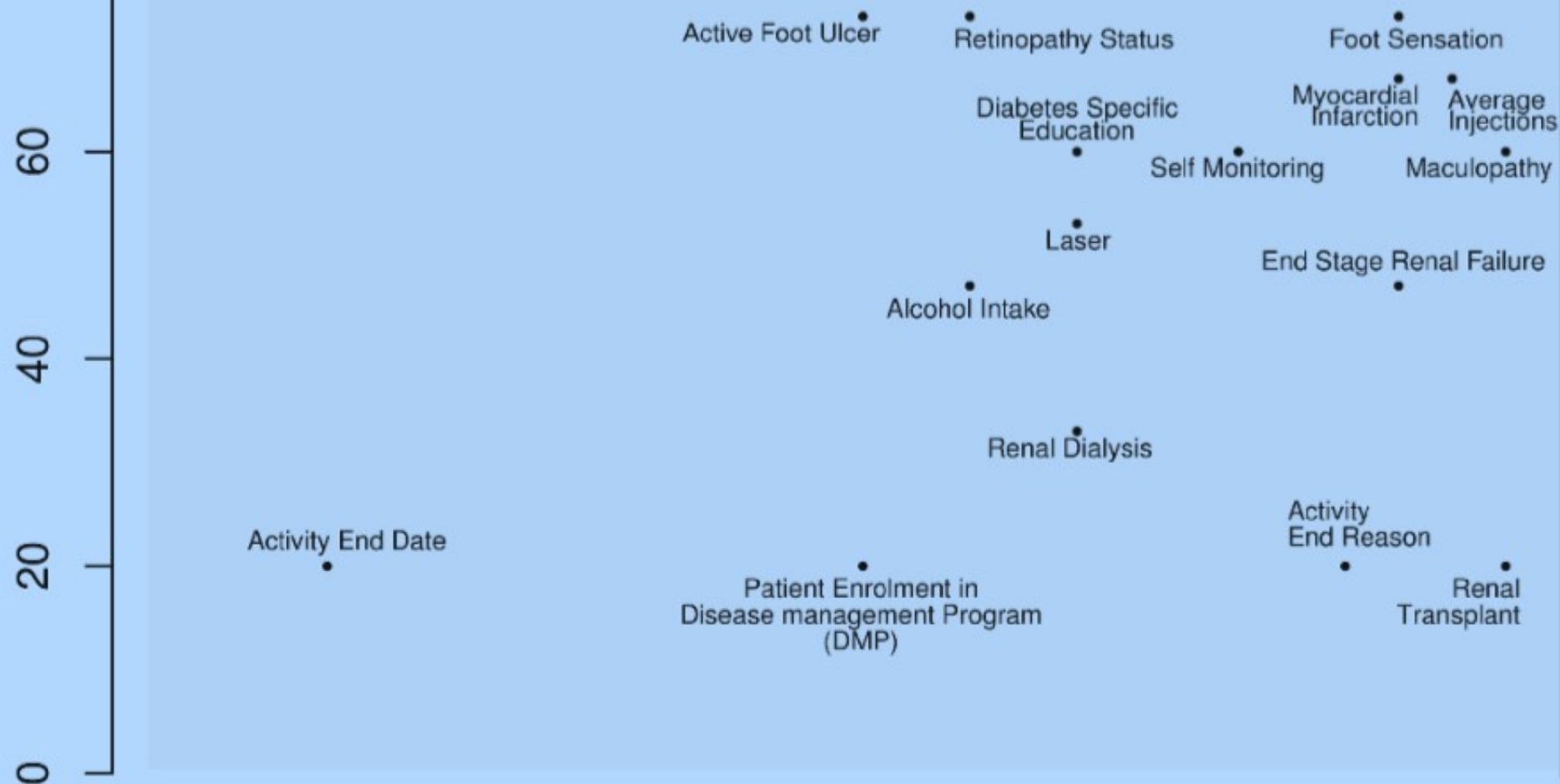
Quadrant IV: High feasibility (recording >75%) and high validity (computed quality score >75%)



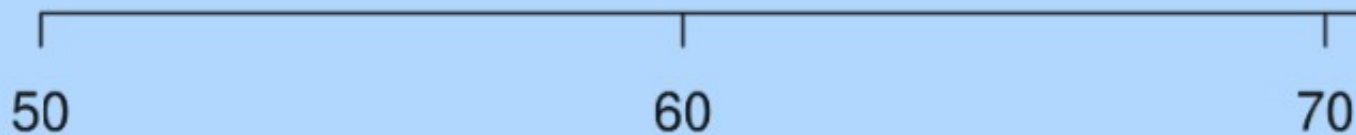


**Quadrant II: High feasibility (recording >75%)
and low validity (computed quality score ≤75%)**





Quadrant I: Low feasibility (recording $\leq 75\%$) and low validity (computed quality score $\leq 75\%$)



EUBIROD Diabetes Report

EUROPEAN BIRO DIABETES INDICATORS - YEAR 2010

N=199,902

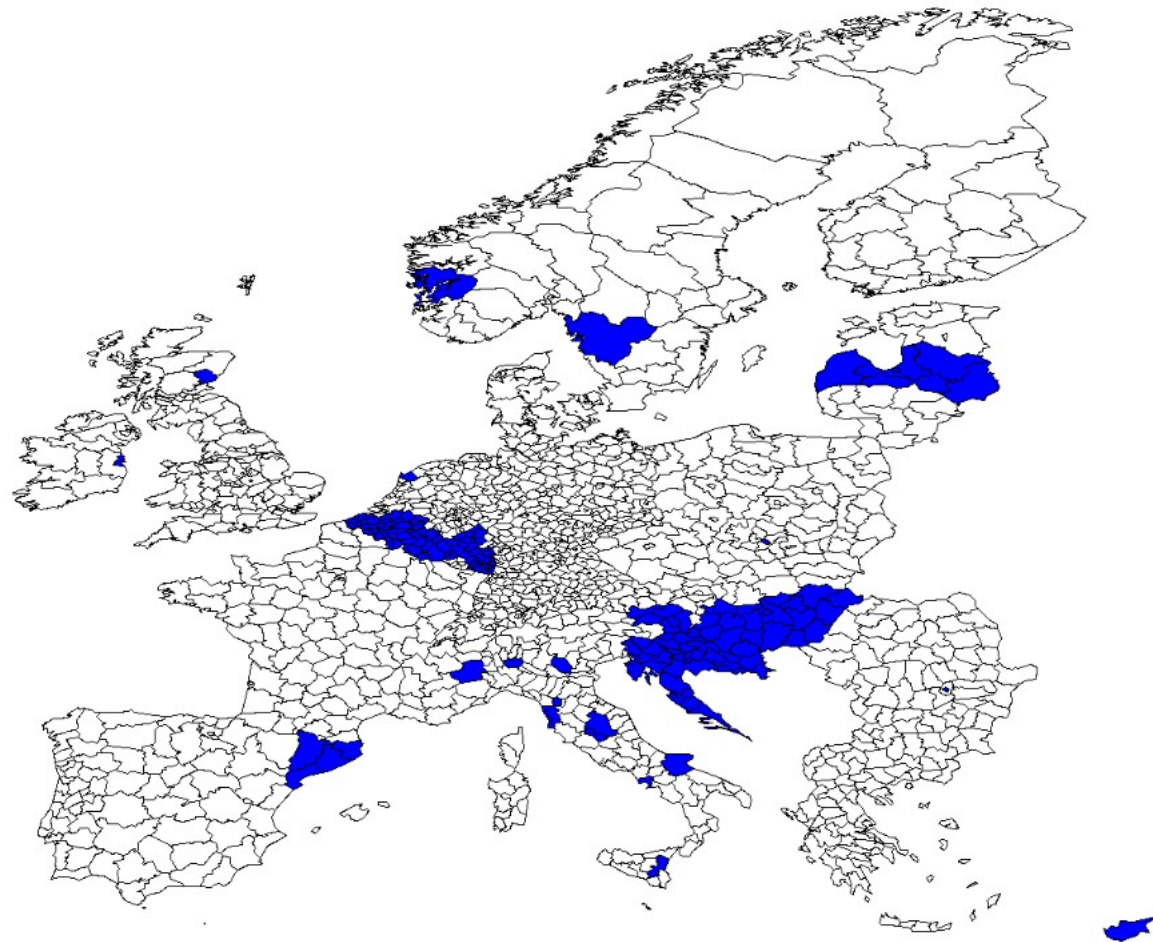
Between 2008-2012, the project "**EUropean Best Information through Regional Outcomes in Diabetes**" (EUBIROD) has realized a system capable of collecting data and delivering reports on diabetes in Europe **most rapidly, at a minimal cost and with the highest levels of privacy and data protection.**

In EUBIROD, different sources linked together in each country are processed to create a common database of aggregate data, through a universal structure that equally applies to all registers and data collection systems.

The **unique** characteristic of the EUBIROD report is that it has been simultaneously produced in nineteen European countries, by sharing the **same European standardized data definitions, statistical routines and transmission formats.** The BIRO system allows **complete interoperability** without interfering with the local organization.

EUBIROD European Network

The following map displays the current geographical coverage of the EUBIROD cohort from nineteen countries who have directly used BIRO to analyze own results and contributed to production of the global EU report for year 2010.



2 Clinical characteristics	4
2.1 Diabetes status	5
2.1.1 Type of diabetes	5
2.1.2 Duration of diabetes (Classes)	9
2.2 Risk factors	19
2.2.1 Obesity	20
2.2.1.1 Weight (most recent measurement in 12 mts)	20
2.2.1.2 BMI	69
2.2.2 Lifestyle	118
2.2.2.1 Smoking status	118
2.2.3 Clinical measurements	144
2.2.3.1 Systolic BP (most recent measurement in 12 mts)	144
2.2.3.2 Diastolic BP (most recent measurement in 12 mts)	192
2.2.3.3 Total cholesterol	240
2.2.3.4 HDL-cholesterol	268
2.2.3.5 Creatinine	296
2.2.3.6 HbA1c	345
2.3 Diabetes complications	394
2.3.1 Retinopathy	394
2.3.2 End stage renal failure	397
2.3.3 Foot ulcer	400
2.3.4 Lower extremity amputation	403
2.3.5 Stroke	406
2.3.6 Myocardial infarction	409
2.3.7 Hypertension	412

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2.3.1 Retinopathy	394
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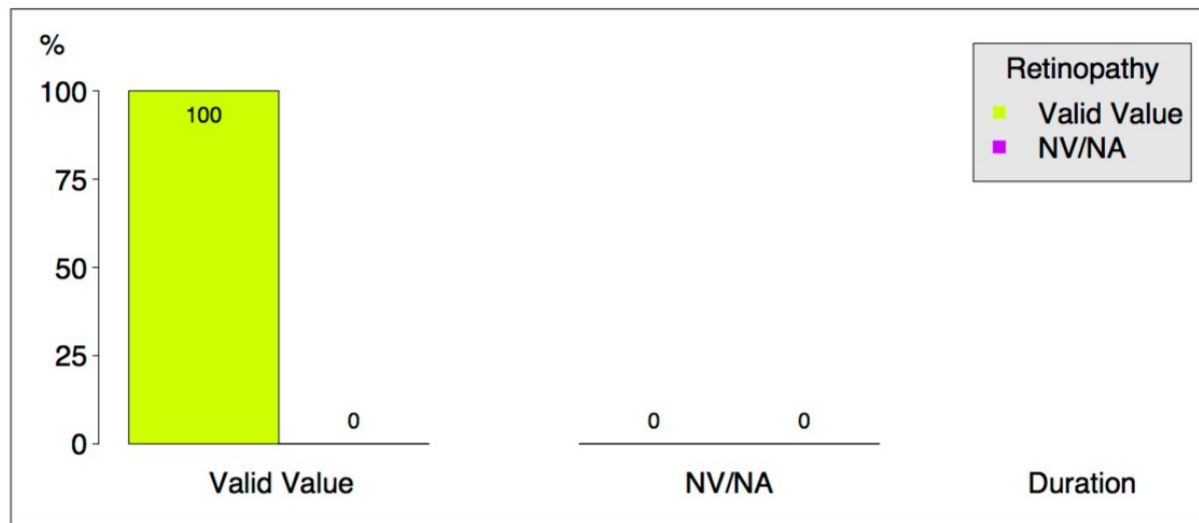
2.3 Diabetes complications

2.3.1 Retinopathy

Retinopathy	Valid Value (%)	NV/NA (%)		N (%)
Valid Value	66008 (100.0)	0(0.0)		66008 (100.0)
NV/NA	0 (0.0)	0(0.0)		0 (0.0)
TOTAL	66008(100.0)	0(0.0)		66008 (100.0)

Table 2.3.1.1 : Retinopathy (by Duration)

CMH Chi-Square	
Value	Too many cells have 0 obs



Barplot 2.3.1.1 - Retinopathy (by Duration)

Retinopathy	<10 (%)	[10 - 20) (%)	>=20 (%)		N (%)
Yes	269 (0.7)	501 (2.8)	567(5.6)		1337 (2.0)
No	37486 (99.3)	17617 (97.2)	9568(94.4)		64671 (98.0)
TOTAL	37755(57.2)	18118(27.4)	10135(15.4)		66008 (100.0)

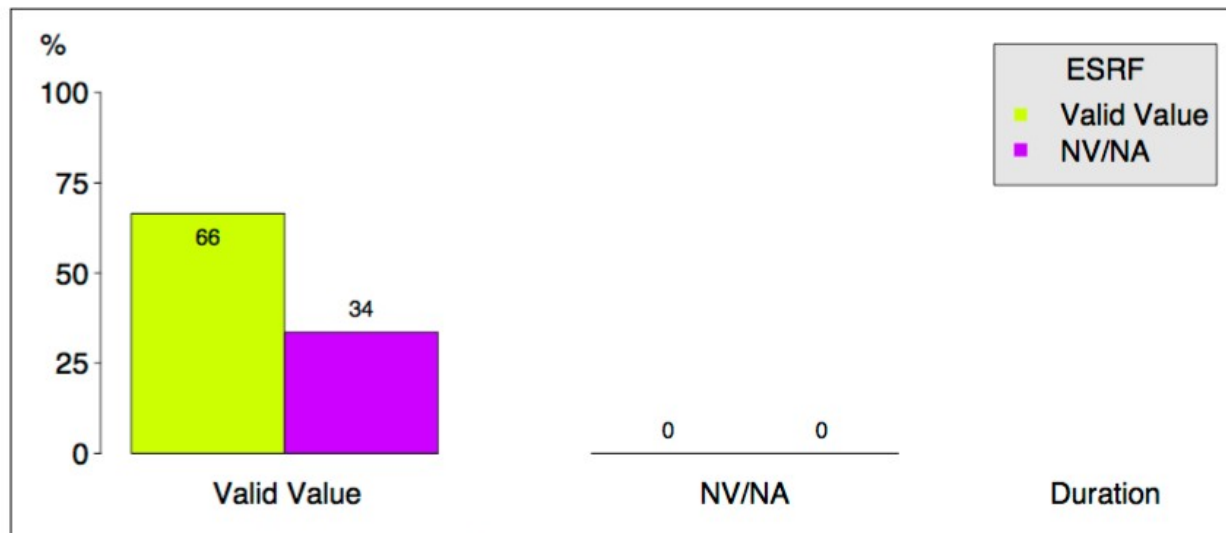
Table 2.3.1.2 : Retinopathy (by Duration)

2.3.2 End stage renal failure

ESRF	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	111086 (66.5)	0(0.0)	111086 (66.5)
NV/NA	56028 (33.5)	0(0.0)	56028 (33.5)
TOTAL	167114(100.0)	0(0.0)	167114 (100.0)

Table 2.3.2.1 : ESRF (by Duration)

	CMH Chi-Square	p.value	df
Value	18139.6135	0	1



Barplot 2.3.2.1 - ESRF (by Duration)

ESRF	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	495 (0.7)	443 (1.7)	598(4.5)	1536 (1.4)
No	70424 (99.3)	26352 (98.3)	12774(95.5)	109550 (98.6)
TOTAL	70919(63.8)	26795(24.1)	13372(12.0)	111086 (100.0)

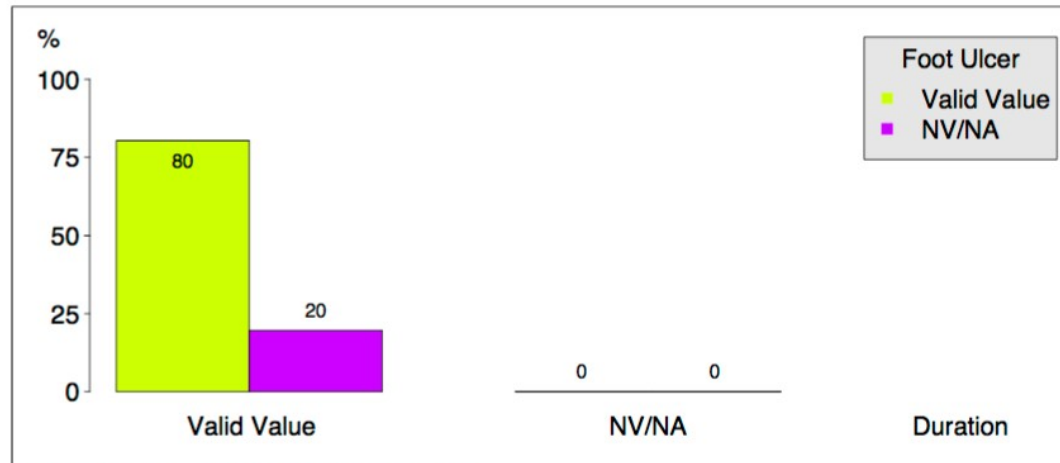
Table 2.3.2.2 : ESRF (by Duration)

2.3.3 Foot ulcer

Foot Ulcer	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	142881 (80.3)	0(0.0)	142881 (80.3)
NV/NA	34959 (19.7)	0(0.0)	34959 (19.7)
TOTAL	177840(100.0)	0(0.0)	177840 (100.0)

Table 2.3.3.1 : Foot Ulcer (by Duration)

	CMH Chi-Square	p.value	df
Value	65492.3419	0	1

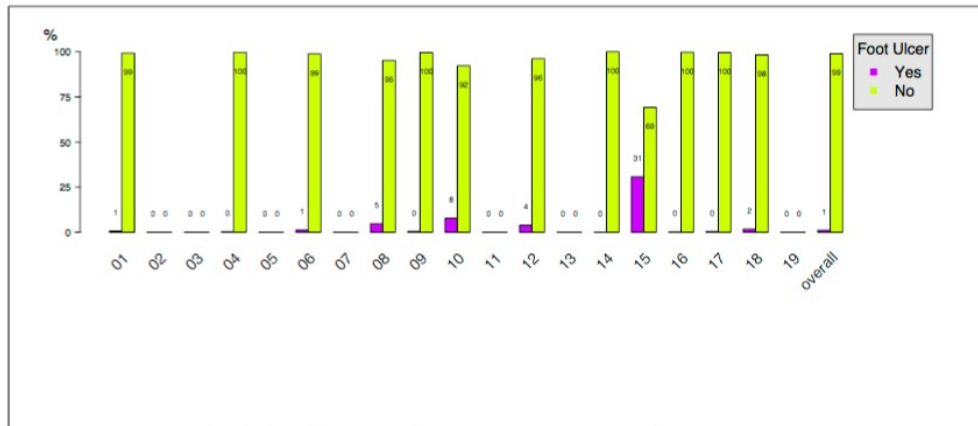


Barplot 2.3.3.1 - Foot Ulcer (by Duration)

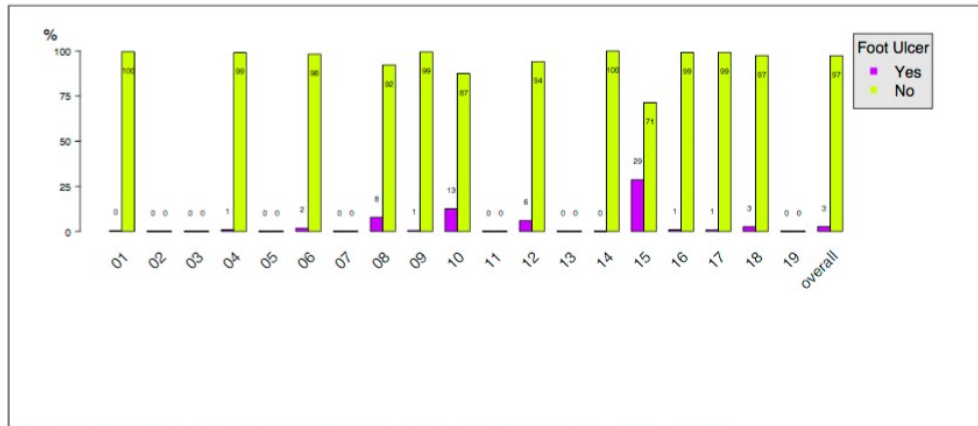
Foot Ulcer	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	935 (1.1)	958 (2.6)	912 (4.5)	2805 (2.0)
No	85386 (98.9)	35252 (97.4)	19438 (95.5)	140076 (98.0)
TOTAL	86321(60.4)	36210(25.3)	20350(14.2)	142881 (100.0)

Table 2.3.3.2 : Foot Ulcer (by Duration)

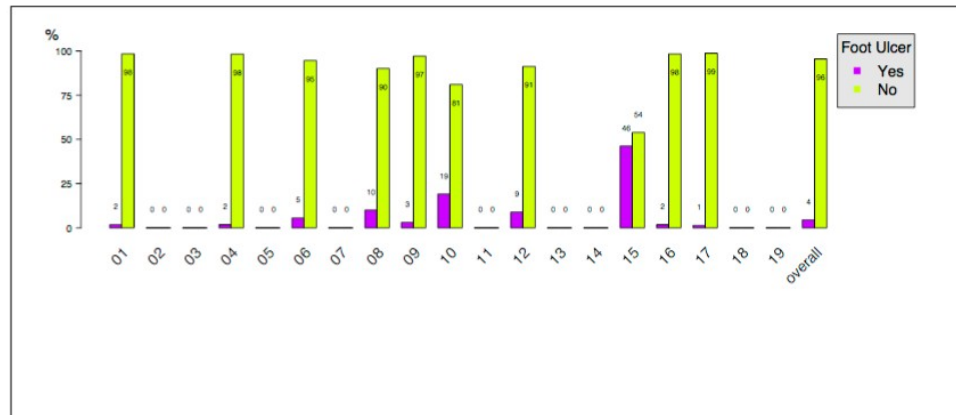
	CMH Chi-Square	p.value	df
Value	1105.5706	0	2



Barplot 2.3.3.2a - Foot Ulcer (by Data Source, Duration = <10)



Barplot 2.3.3.2b - Foot Ulcer (by Data Source, Duration = [10 - 20])



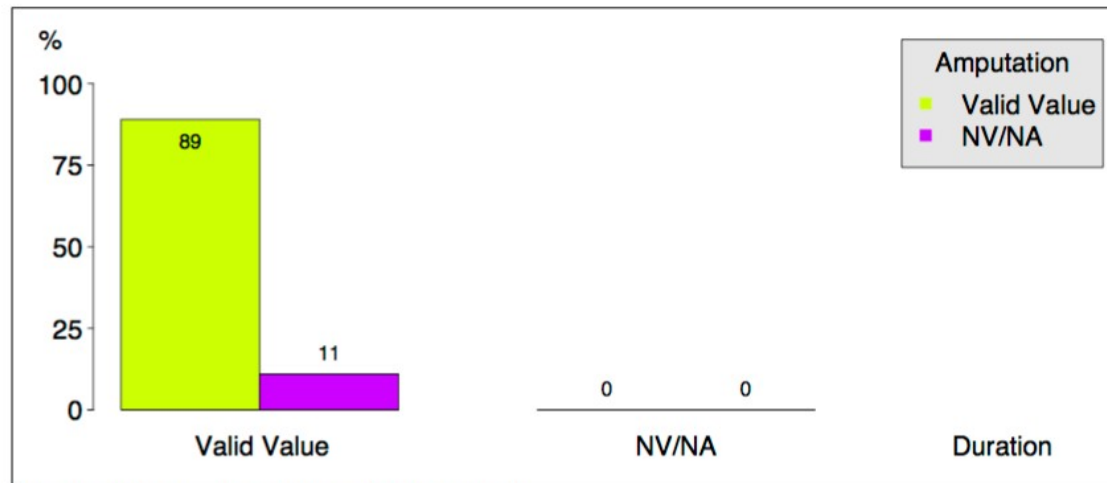
Barplot 2.3.3.2c - Foot Ulcer (by Data Source, Duration = >=20)

2.3.4 Lower extremity amputation

Amputation	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	164497 (89.0)	0(0.0)	164497 (89.0)
NV/NA	20332 (11.0)	0(0.0)	20332 (11.0)
TOTAL	184829(100.0)	0(0.0)	184829 (100.0)

Table 2.3.4.1 : Amputation (by Duration)

	CMH Chi-Square	p.value	df
Value	112447.4364	0	1

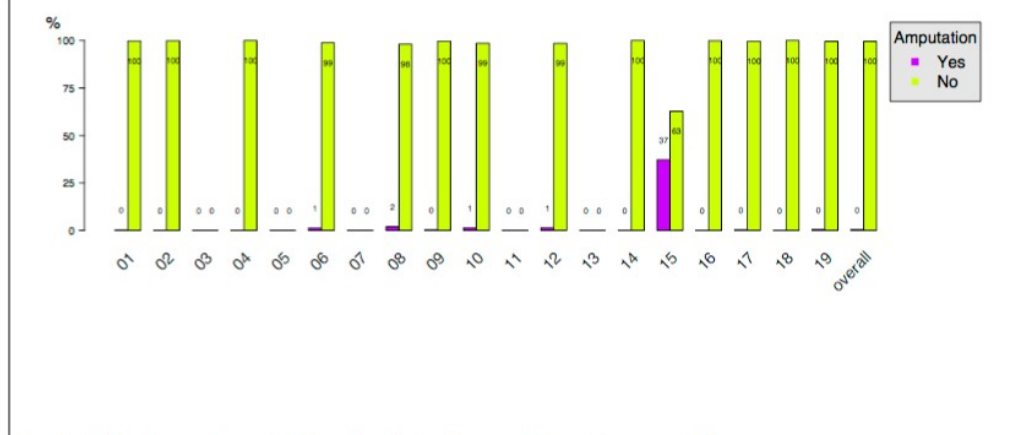


Barplot 2.3.4.1 - Amputation (by Duration)

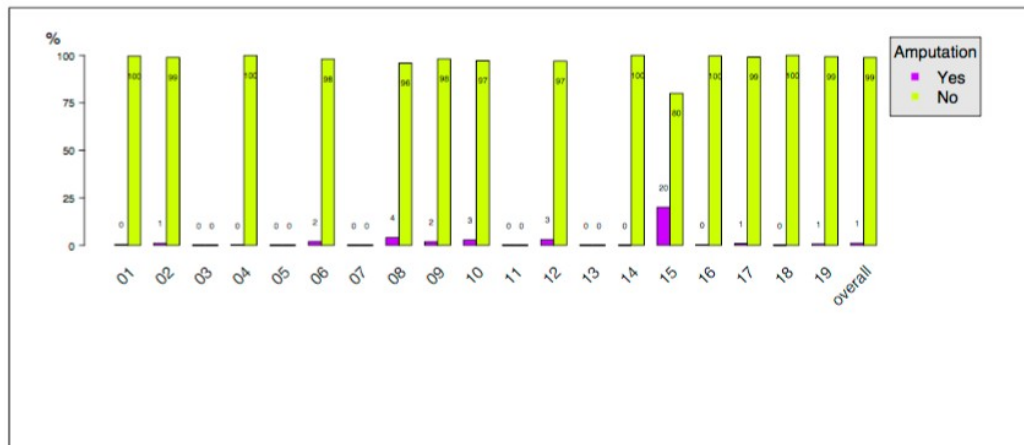
Amputation	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	434 (0.4)	476 (1.1)	503(2.1)	1413 (0.9)
No	97966 (99.6)	41954 (98.9)	23164(97.9)	163084 (99.1)
TOTAL	98400(59.8)	42430(25.8)	23667(14.4)	164497 (100.0)

Table 2.3.4.2 : Amputation (by Duration)

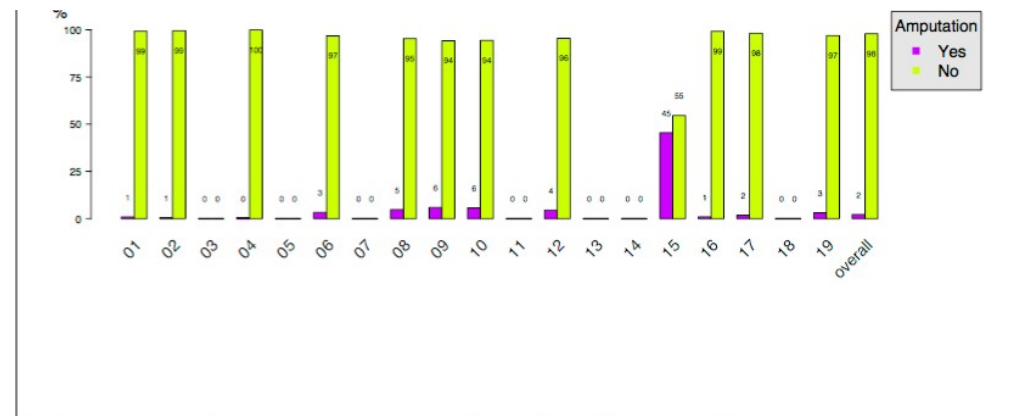
	CMH Chi-Square	p.value	df
Value	681.9056	0	2



Barplot 2.3.4.2a - Amputation (by Data Source, Duration = <10)



Barplot 2.3.4.2b - Amputation (by Data Source, Duration = [10 - 20))



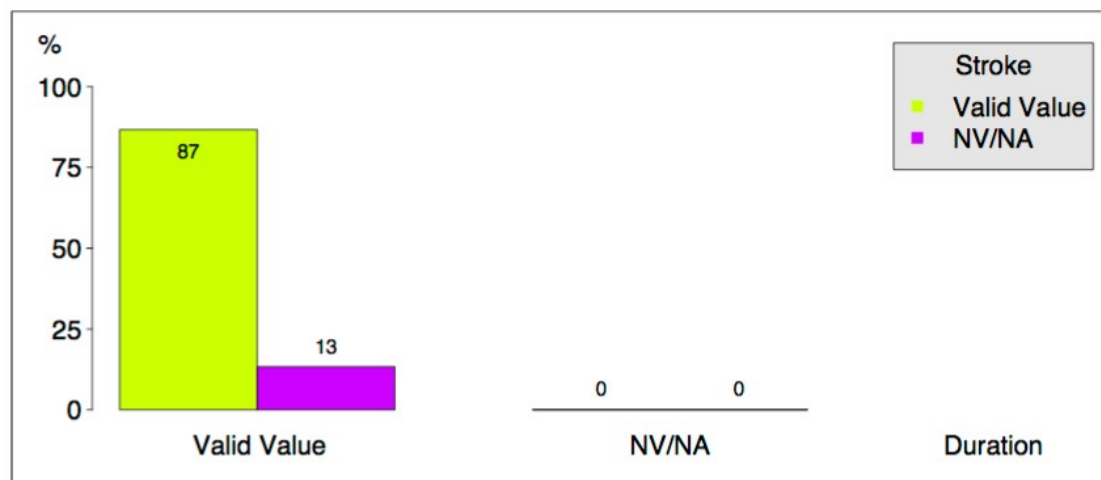
Barplot 2.3.4.2c - Amputation (by Data Source, Duration = >=20)

2.3.5 Stroke

Stroke	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	156482 (86.7)	0(0.0)	156482 (86.7)
NV/NA	24068 (13.3)	0(0.0)	24068 (13.3)
TOTAL	180550(100.0)	0(0.0)	180550 (100.0)

Table 2.3.5.1 : Stroke (by Duration)

	CMH Chi-Square	p.value	df
Value	97111.4229	0	1

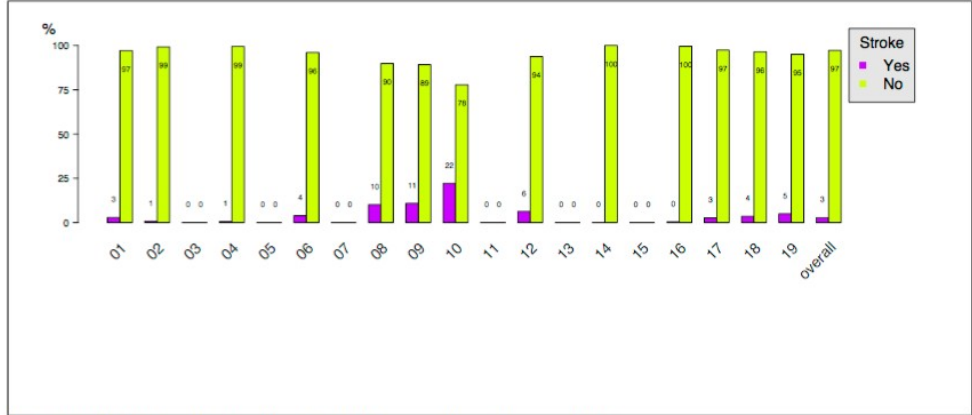


Barplot 2.3.5.1 - Stroke (by Duration)

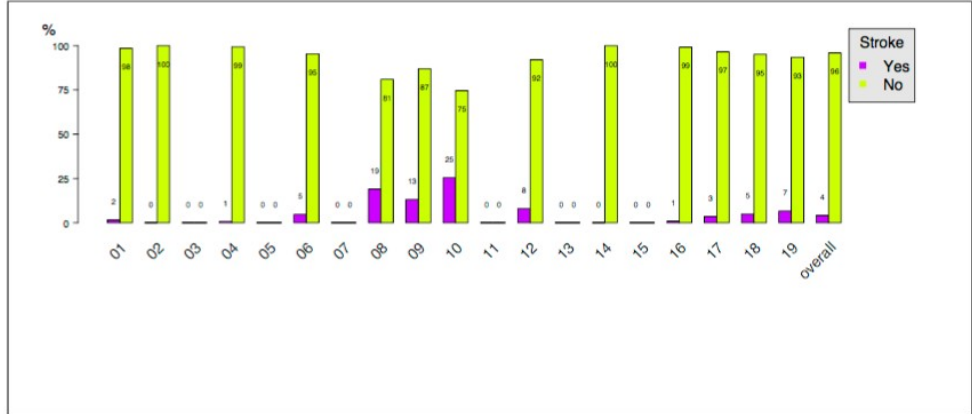
Stroke	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	2598 (2.8)	1639 (4.1)	1100(4.9)	5337 (3.4)
No	91335 (97.2)	38272 (95.9)	21538(95.1)	151145 (96.6)
TOTAL	93933(60.0)	39911(25.5)	22638(14.5)	156482 (100.0)

Table 2.3.5.2 : Stroke (by Duration)

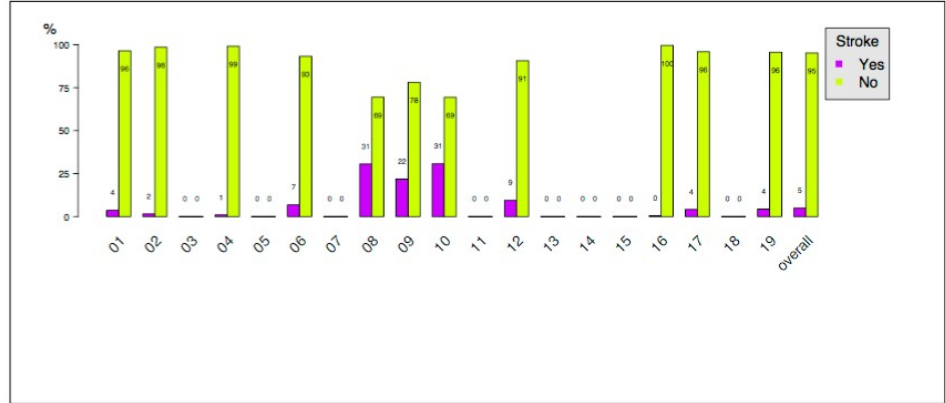
	CMH Chi-Square	p.value	df
Value	321.4249	0	2



Barplot 2.3.5.2a - Stroke (by Data Source, Duration = <10)



Barplot 2.3.5.2b - Stroke (by Data Source, Duration = [10 - 20])



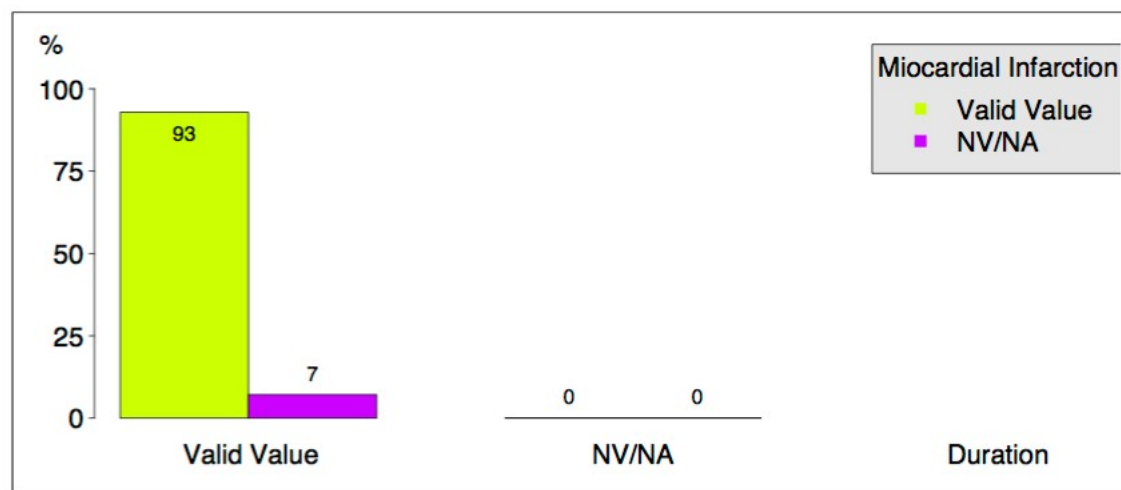
Barplot 2.3.5.2c - Stroke (by Data Source, Duration = >=20)

2.3.6 Myocardial infarction

Miocardial Infarction	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	160081 (92.8)	0(0.0)	160081 (92.8)
NV/NA	12355 (7.2)	0(0.0)	12355 (7.2)
TOTAL	172436(100.0)	0(0.0)	172436 (100.0)

Table 2.3.6.1 : Miocardial Infarction (by Duration)

	CMH Chi-Square	p.value	df
Value	126556.9317	0	1



Barplot 2.3.6.1 - Miocardial Infarction (by Duration)

Miocardial Infarction	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	3351 (3.5)	2296 (5.6)	1519 (6.7)	7166 (4.5)
No	92770 (96.5)	38891 (94.4)	21254 (93.3)	152915 (95.5)
TOTAL	96121 (60.0)	41187 (25.7)	22773 (14.2)	160081 (100.0)

Table 2.3.6.2 : Miocardial Infarction (by Duration)

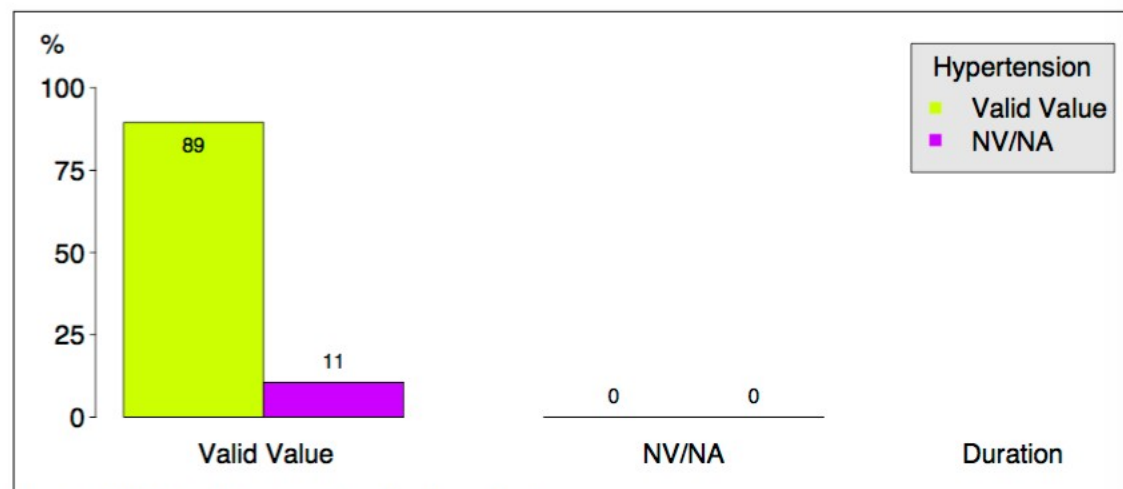
	CMH Chi-Square	p.value	df
Value	592.8547	0	2

2.3.7 Hypertension

Hypertension	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	110406 (89.5)	0(0.0)	110406 (89.5)
NV/NA	13010 (10.5)	0(0.0)	13010 (10.5)
TOTAL	123416(100.0)	0(0.0)	123416 (100.0)

Table 2.3.7.1 : Hypertension (by Duration)

	CMH Chi-Square	p.value	df
Value	76861.8398	0	1

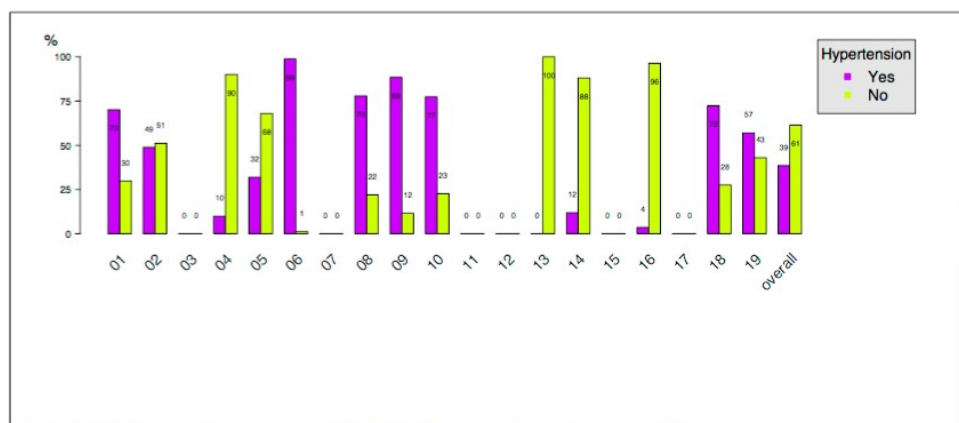


Barplot 2.3.7.1 - Hypertension (by Duration)

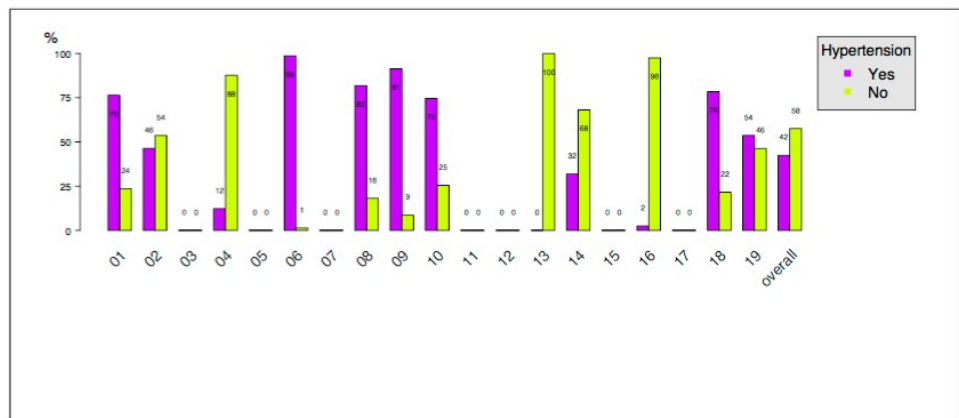
Hypertension	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	24240 (38.6)	12919 (42.4)	6065(35.5)	43224 (39.2)
No	38627 (61.4)	17525 (57.6)	11030(64.5)	67182 (60.8)
TOTAL	62867(56.9)	30444(27.6)	17095(15.5)	110406 (100.0)

Table 2.3.7.2 : Hypertension (by Duration)

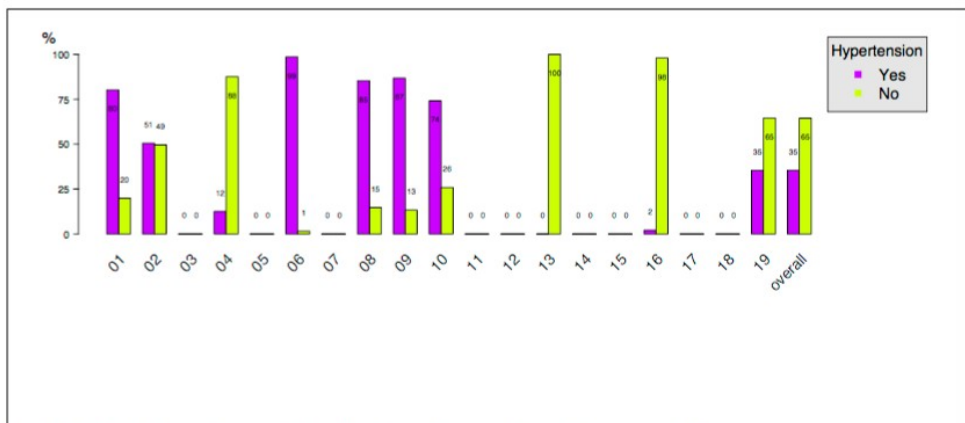
	CMH Chi-Square	p.value	df
Value	243.9366	0	2



Barplot 2.3.7.2a - Hypertension (by Data Source, Duration = <10)



Barplot 2.3.7.2b - Hypertension (by Data Source, Duration = [10 - 20])



Barplot 2.3.7.2c - Hypertension (by Data Source, Duration = >=20)

3.3 Processes

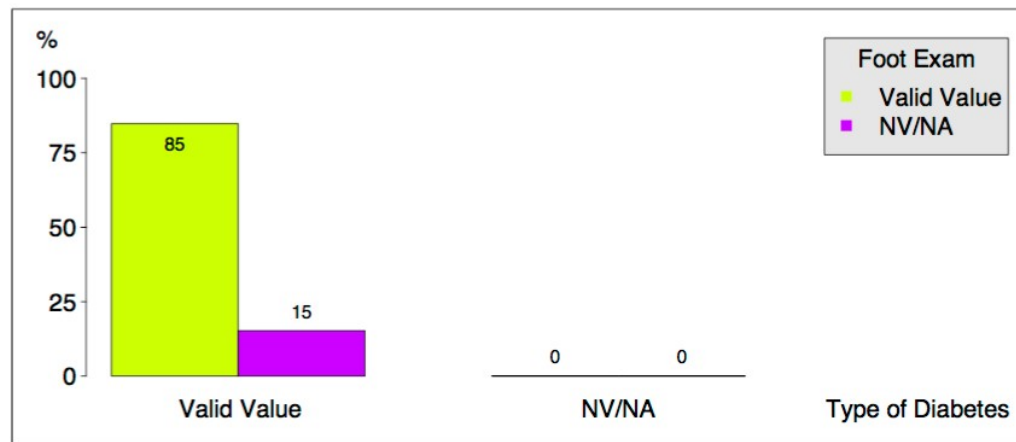
3.3.1 Foot Exam

3.3.1.1 Foot Exam: Done

Foot Exam	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	163356 (84.7)	0(0.0)	163356 (84.7)
NV/NA	29407 (15.3)	0(0.0)	29407 (15.3)
TOTAL	192763(100.0)	0(0.0)	192763 (100.0)

Table 3.3.1.1.1 : Foot Exam (by Type of Diabetes)

	CMH Chi-Square	p.value	df
Value	93079.7643	0	1

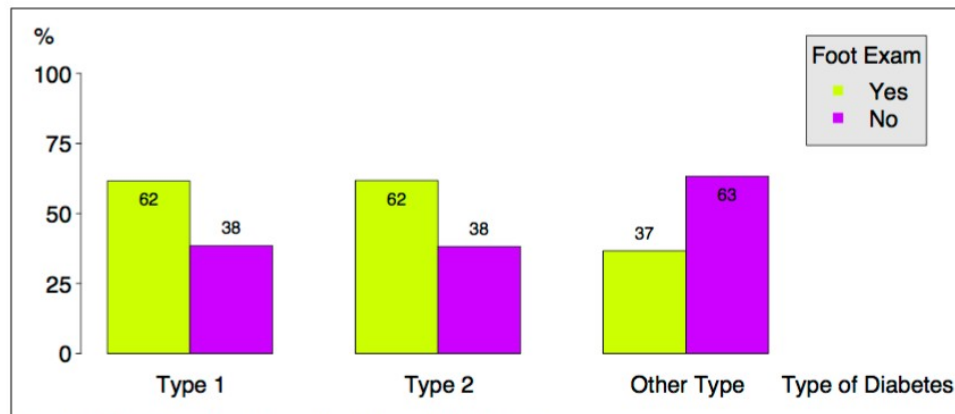


Barplot 3.3.1.1.1 - Foot Exam (by Type of Diabetes)

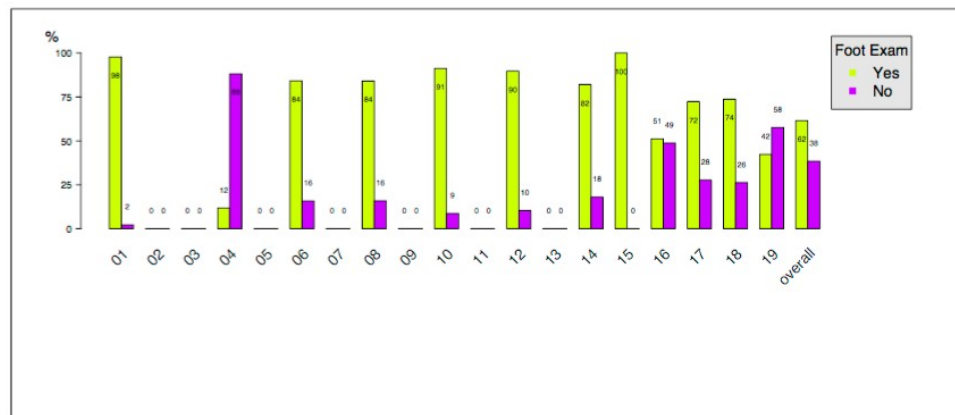
Foot Exam	Type 1 (%)	Type 2 (%)	Other Type (%)	N (%)
Yes	9710 (61.6)	89272 (61.8)	1143(36.7)	100125 (61.3)
No	6064 (38.4)	55194 (38.2)	1973(63.3)	63231 (38.7)
TOTAL	15774(9.7)	144466(88.4)	3116(1.9)	163356 (100.0)

Table 3.3.1.1.2 : Foot Exam (by Type of Diabetes)

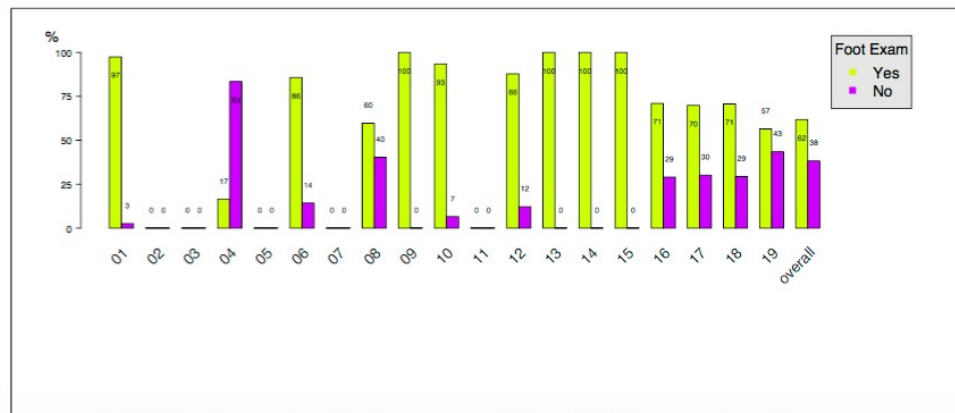
	CMH Chi-Square	p.value	df
Value	811.3237	0	2



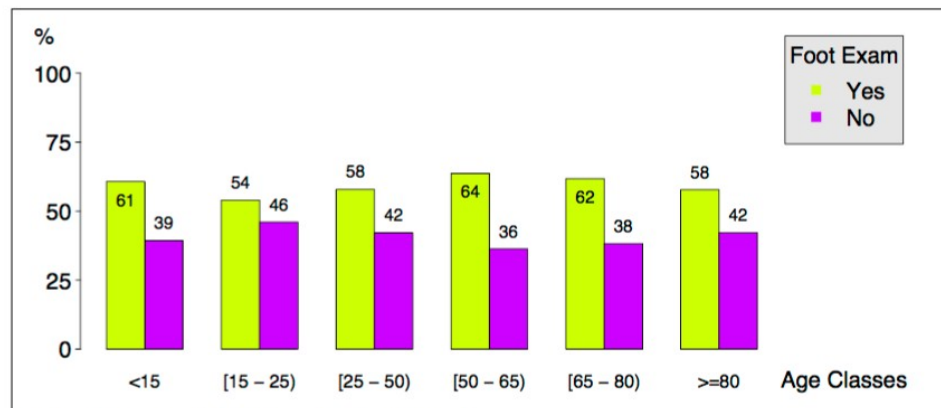
Barplot 3.3.1.1.2 - Foot Exam (by Type of Diabetes)



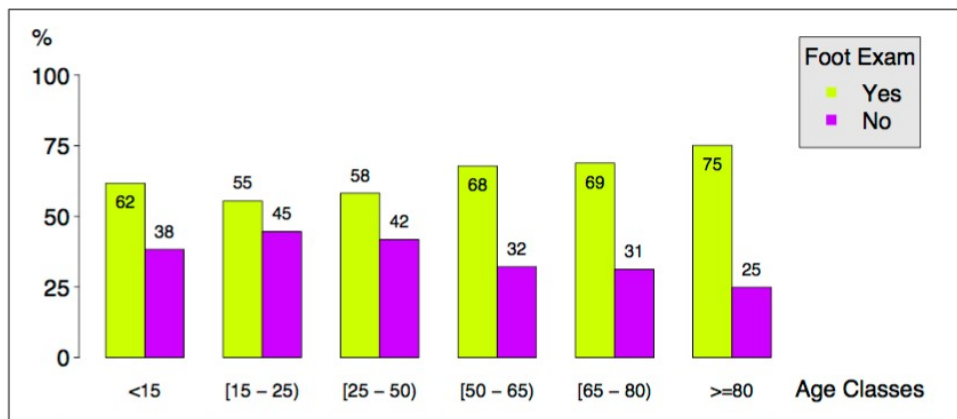
Barplot 3.3.1.1.2a - Foot Exam (by Data Source, Type of Diabetes = Type 1)



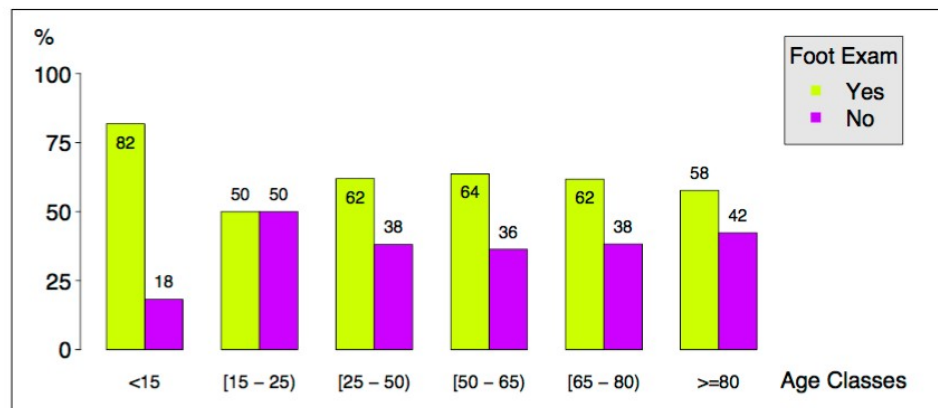
Barplot 3.3.1.1.2b - Foot Exam (by Data Source, Type of Diabetes = Type 2)



Barplot 3.3.1.1.4 - Foot Exam (by Age Classes)



Barplot 3.3.1.1.6 - Foot Exam (by Age Classes, Type of Diabetes = Type 1)

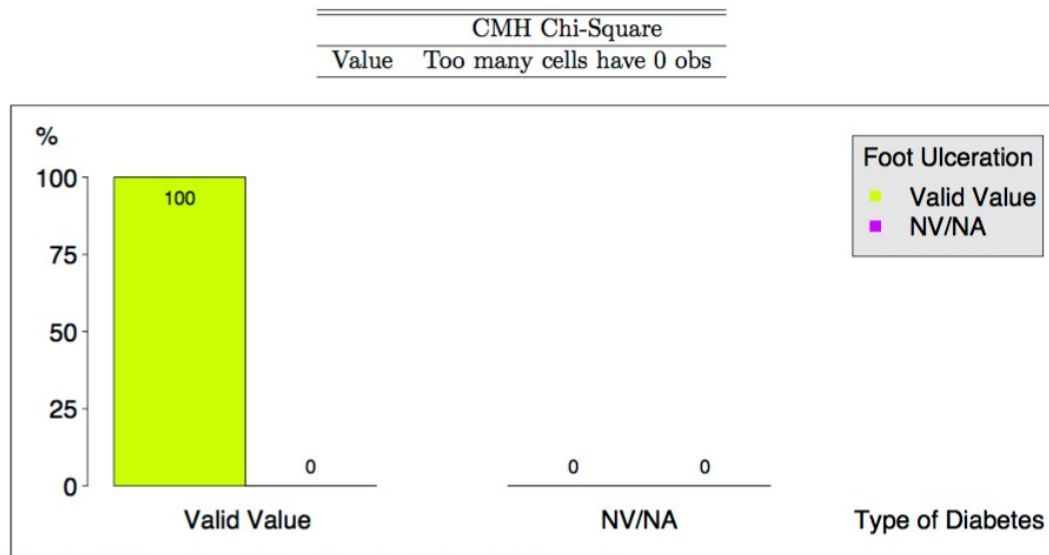


Barplot 3.3.1.1.8 - Foot Exam (by Age Classes, Type of Diabetes = Type 2)

5.3.7 Rate of foot ulceration in adults

Foot Ulceration	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	35191 (100.0)	0(0.0)	35191 (100.0)
NV/NA	0 (0.0)	0(0.0)	0 (0.0)
TOTAL	35191(100.0)	0(0.0)	35191 (100.0)

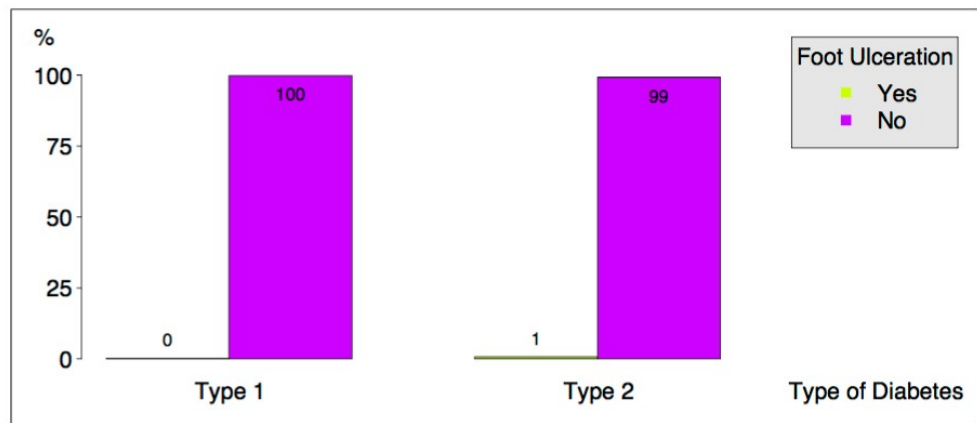
Table 5.3.7.1 : Foot Ulceration (by Type of Diabetes)



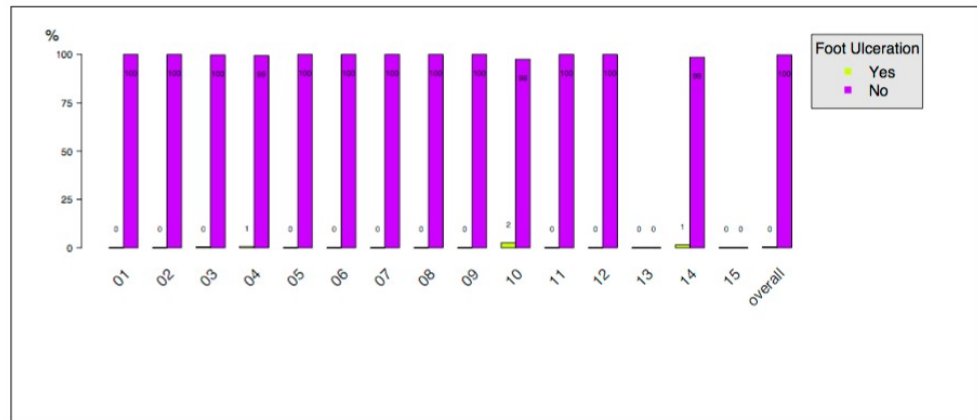
Foot Ulceration	Type 1 (%)	Type 2 (%)	N (%)
Yes	6 (0.2)	216(0.7)	222 (0.6)
No	3529 (99.8)	31440(99.3)	34969 (99.4)
TOTAL	3535(10.0)	31656(90.0)	35191 (100.0)

Table 5.3.7.2 : Foot Ulceration (by Type of Diabetes)

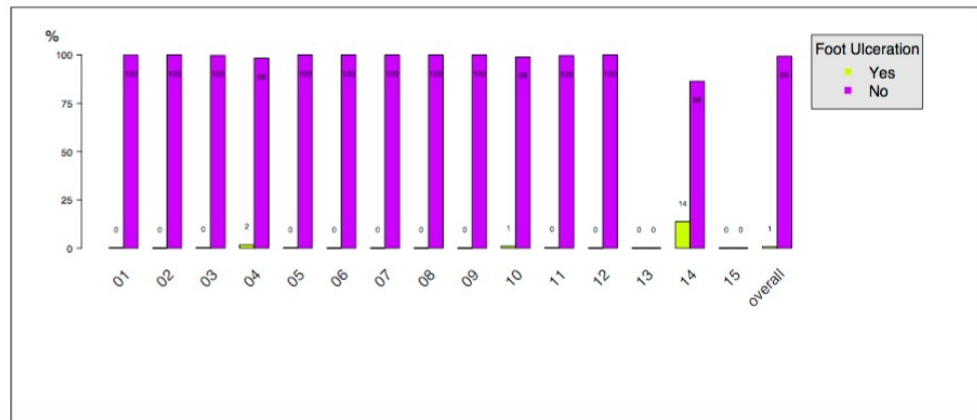
CMH Chi-Square			
Value	p.value	df	
12.524	4e - 04	1	



Barplot 5.3.7.2 - Foot Ulceration (by Type of Diabetes)



Barplot 5.3.7.2a - Foot Ulceration (by Data Source, Type of Diabetes = Type 1)



Barplot 5.3.7.2b - Foot Ulceration (by Data Source, Type of Diabetes = Type 2)

Optimizing EUBIROD reports for routine clinical practice

Increasing informations related to each complication?

i.e. not just retinopathy but background/proliferative retin.

Cross-matching clinical informations?

i.e. not only age and duration of disease but metabolic control, type of therapy, presence of other comorbidities, etc

Generating risk tabs?

i.e. UKPDS risk engine, cardiac risk assessment, etc



Thank you for your
attention

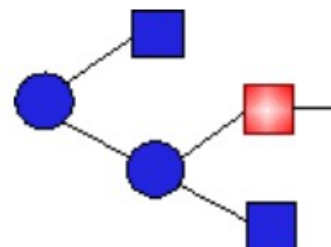
- Percentage of data sources with data item recorded ("percentage recorded")
- Percentage of data sources with data item mandatory ("percentage mandatory")
- Percentage of data sources with consistency of data item equal to "High"
- Mean completeness
- Percentage of data sources with overall quality score equal to "High" ("high overall quality score")
- Average of mean completeness and consistency observed in the sample ("computed quality score")

2.3 Diabetes complications	2.3.1	Retinopathy	Cl. D duration, R
	2.3.2	End stage renal failure	Cl. D duration, R
	2.3.3	Foot ulcer	Cl. D duration, R
	2.3.4	Lower extremity amputation	Cl. D duration, R
	2.3.5	Stroke	Cl. D duration, R
	2.3.6	Myocardial infarction	Cl. D duration, R
	2.3.7	Hypertension	Cl. D duration, R

Rapporto Diabete EUBIROD Italia

INDICATORI EUROPEI SISTEMA BIRO - DATI ANNO 2010

N=42.953



*In collaborazione tra Società Italiana di Diabetologia,
Università di Perugia e Serectrix snc*

Il progetto "EUropean Best Information through Regional Outcomes in Diabetes" (EUBIROD), operativo negli anni 2008-2012, ha compreso al suo interno l'attività di raccolta ed elaborazione dati prevista nella **sperimentazione SID del Rapporto Diabete EUBIROD Italia**.

SID EUBIROD Italian Network

La mappa seguente visualizza la copertura attuale della coorte EUBIROD proveniente dai 15 centri che hanno partecipato alla produzione del Rapporto EUBIROD SID 2010.



The EUBIROD Diabetes Report

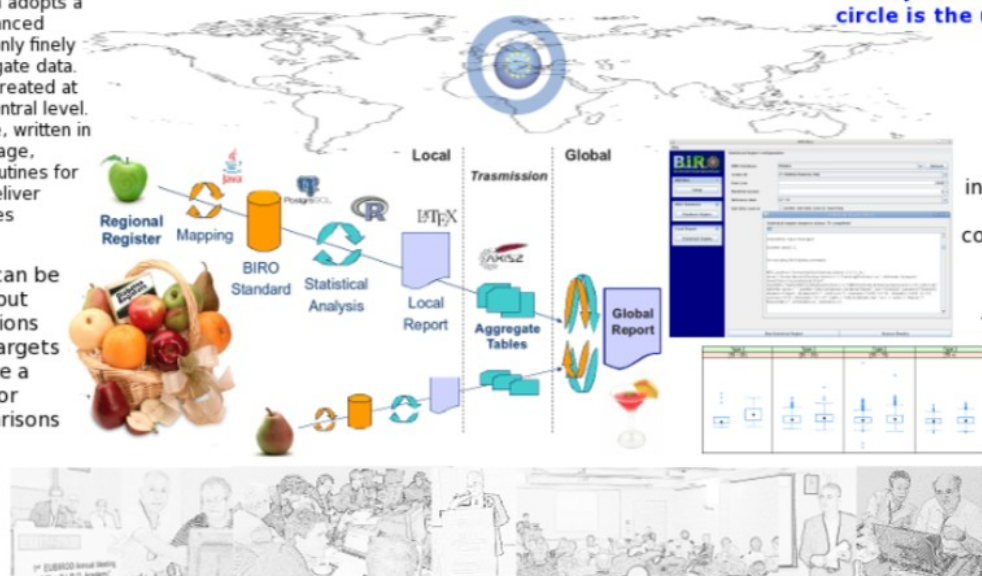
Preliminary Results from the European Coalition of Diabetes Registers

All BIRO software has been realized using open source tools available in the public domain. The platform adopts a secure, privacy enhanced design exchanging only finely tuned sets of aggregate data. A BIRO database is created at each site and at a central level. The statistical engine, written in the powerful R language, applies advanced routines for risk adjustment to deliver standardized diabetes indicators.

Diabetes Registers can be of different nature, but standardized definitions and key statistical targets can be used to derive a common structure for international comparisons

The BIRO System and the EUBIROD Project have been funded by the European Commission for five consecutive years. The design of the system and the software realized can be used at a global level.

Diabetes is a global epidemic that must be fought on a daily basis with routine monitoring and better governance. Although well defined, core diabetes indicators are still difficult to obtain for international comparisons on a regular basis. The blue circle is the universal symbol for diabetes.



The BIROBox runs on a cross-platform Linux distribution: BIROX. Its Java-powered integrated interface allows users to operate all software components and send aggregate data to a central server

The global report is automatically delivered by the BIRO system running on a central server. Its structure is identical to the one realized using BIRO at each regional centre.

Over five years, the BIRO and EUBIROD Consortia conceived and realized the BIRO system from the ground up, through a concerted process of collaborative design, development, live testing and user training. The BIRO Academy is the EUBIROD initiative to extend the dissemination program to the global community engaged in the fight against diabetes across the world.

The EUBIROD Diabetes Report is a deliverable of the EUBIROD project, a project co-funded by the European Commission to deliver a Shared Evidence-based Diabetes Information System (SEDIS).

2 Clinical characteristics	4
2.1 Diabetes status	5
2.1.1 Type of diabetes	5
2.1.2 Duration of diabetes (Classes)	9
2.2 Risk factors	19
2.2.1 Obesity	20
2.2.1.1 Weight (most recent measurement in 12 mts)	20
2.2.1.2 BMI	68
2.2.2 Lifestyle	116
2.2.2.1 Smoking status	116
2.2.3 Clinical measurements	140
2.2.3.1 Systolic BP (most recent measurement in 12 mts)	140
2.2.3.2 Diastolic BP (most recent measurement in 12 mts)	187
2.2.3.3 Total cholesterol	234
2.2.3.4 HDL-cholesterol	262
2.2.3.5 Creatinine	290
2.2.3.6 HbA1c	334
2.3 Diabetes complications	382
2.3.1 Retinopathy	382
2.3.2 End stage renal failure	385
2.3.3 Foot ulcer	388
2.3.4 Lower extremity amputation	391
2.3.5 Stroke	394
2.3.6 Myocardial infarction	397
2.3.7 Hypertension	400

2.3 Diabetes complications	382
2.3.1 Retinopathy	382
2.3.2 End stage renal failure	385
2.3.3 Foot ulcer	388
2.3.4 Lower extremity amputation	391
2.3.5 Stroke	394
2.3.6 Myocardial infarction	397
2.3.7 Hypertension	400

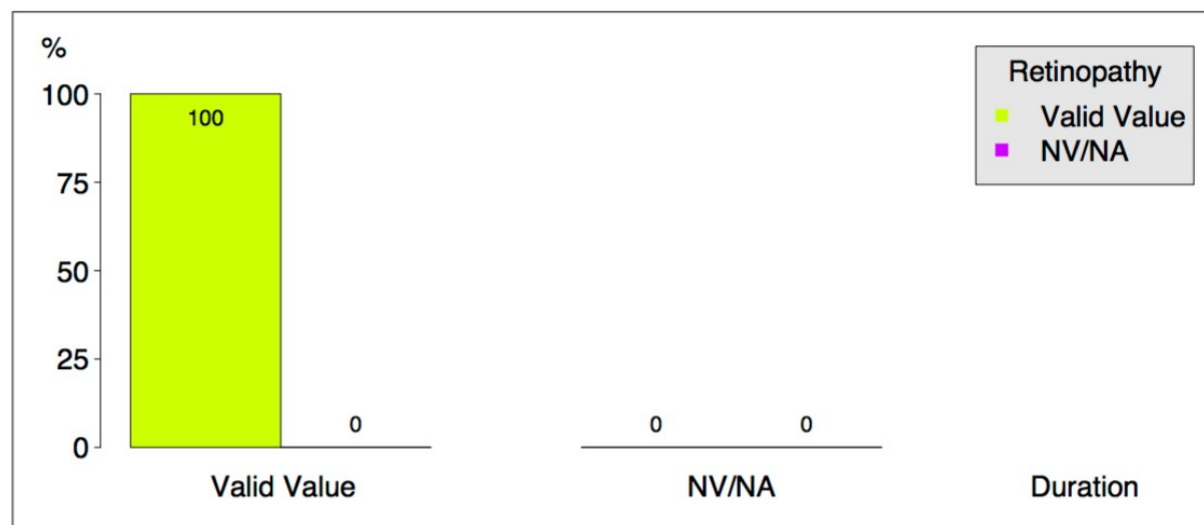
2.3 Diabetes complications

2.3.1 Retinopathy

Retinopathy	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	22360 (100.0)	0(0.0)	22360 (100.0)
NV/NA	0 (0.0)	0(0.0)	0 (0.0)
TOTAL	22360(100.0)	0(0.0)	22360 (100.0)

Table 2.3.1.1 : Retinopathy (by Duration)

CMH Chi-Square	
Value	Too many cells have 0 obs



Barplot 2.3.1.1 - Retinopathy (by Duration)

Retinopathy	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	31 (0.3)	63 (0.9)	88(1.5)	182 (0.8)
No	9614 (99.7)	6763 (99.1)	5801(98.5)	22178 (99.2)
TOTAL	9645(43.1)	6826(30.5)	5889(26.3)	22360 (100.0)

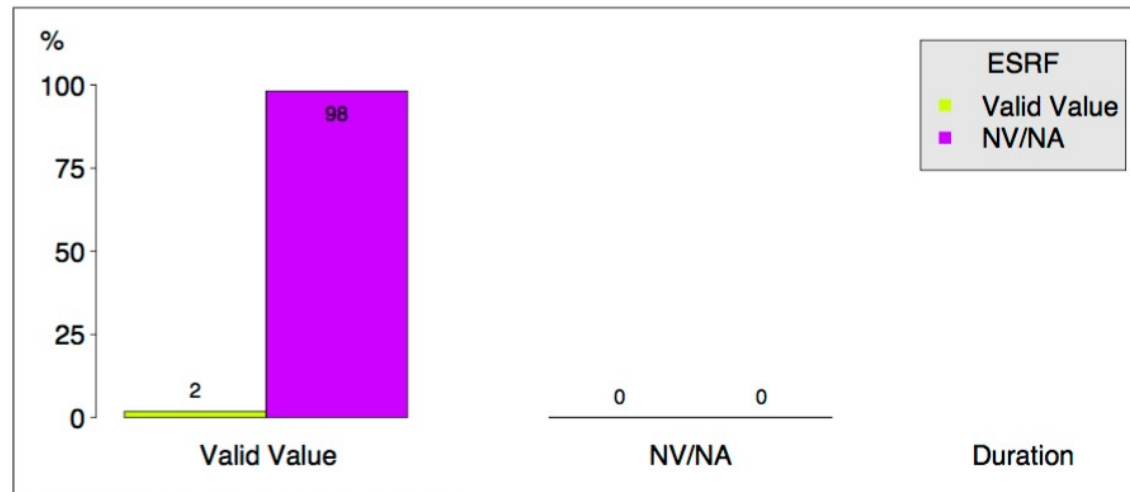
Table 2.3.1.2 : Retinopathy (by Duration)

2.3.2 End stage renal failure

ESRF	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	596 (1.8)	0(0.0)	596 (1.8)
NV/NA	31943 (98.2)	0(0.0)	31943 (98.2)
TOTAL	32539(100.0)	0(0.0)	32539 (100.0)

Table 2.3.2.1 : ESRF (by Duration)

	CMH Chi-Square	p.value	df
Value	30198.6665	0	1



Barplot 2.3.2.1 - ESRF (by Duration)

ESRF	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	175 (100.0)	168 (100.0)	253(100.0)	596 (100.0)
TOTAL	175(29.4)	168(28.2)	253(42.4)	596 (100.0)

Table 2.3.2.2 : ESRF (by Duration)

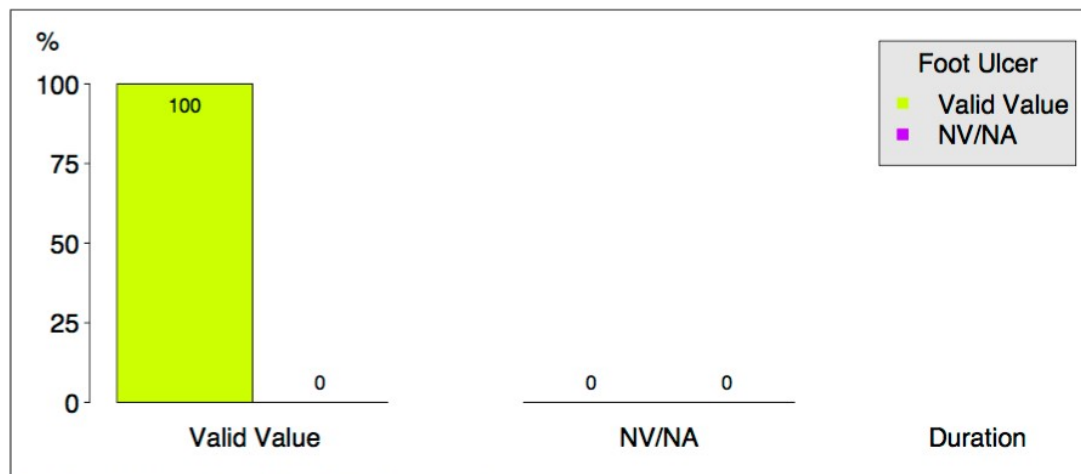
	CMH Chi-Square	p.value	df
Value	22.4128	0	2

2.3.3 Foot ulcer

Foot Ulcer	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	36164 (100.0)	0(0.0)	36164 (100.0)
NV/NA	0 (0.0)	0(0.0)	0 (0.0)
TOTAL	36164(100.0)	0(0.0)	36164 (100.0)

Table 2.3.3.1 : Foot Ulcer (by Duration)

CMH Chi-Square	
Value	Too many cells have 0 obs

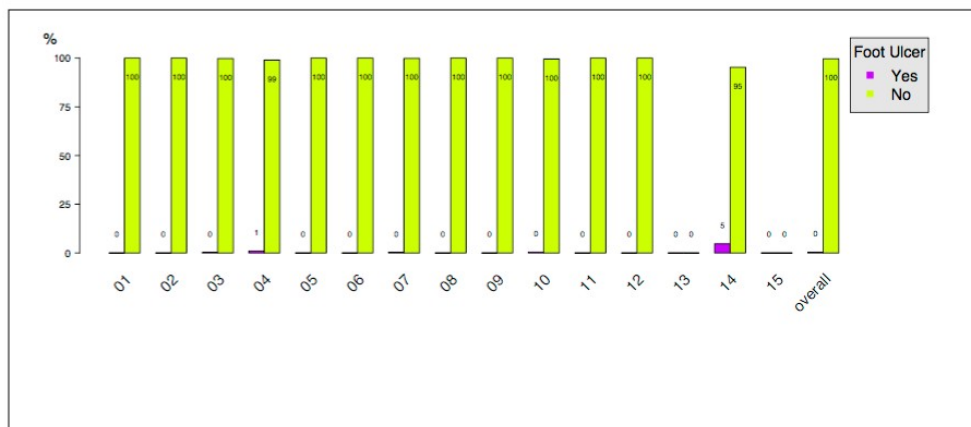


Barplot 2.3.3.1 - Foot Ulcer (by Duration)

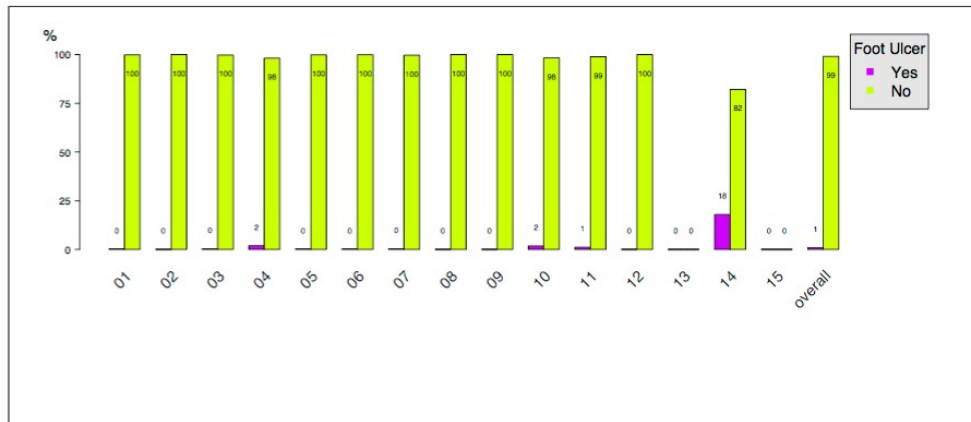
Foot Ulcer	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	52 (0.3)	96 (0.9)	153(1.8)	301 (0.8)
No	17037 (99.7)	10353 (99.1)	8473(98.2)	35863 (99.2)
TOTAL	17089(47.3)	10449(28.9)	8626(23.9)	36164 (100.0)

Table 2.3.3.2 : Foot Ulcer (by Duration)

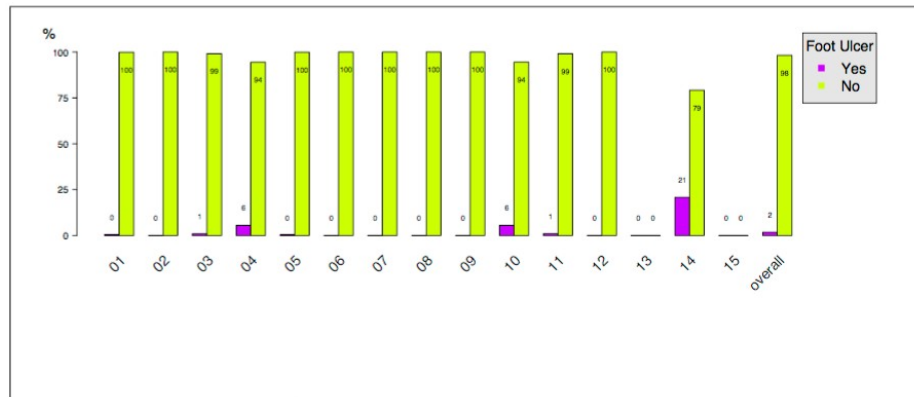
CMH Chi-Square			
Value	p.value	df	
151.2881	0	2	



Barplot 2.3.3.2a - Foot Ulcer (by Data Source, Duration = <10)



Barplot 2.3.3.2b - Foot Ulcer (by Data Source, Duration = [10 - 20])



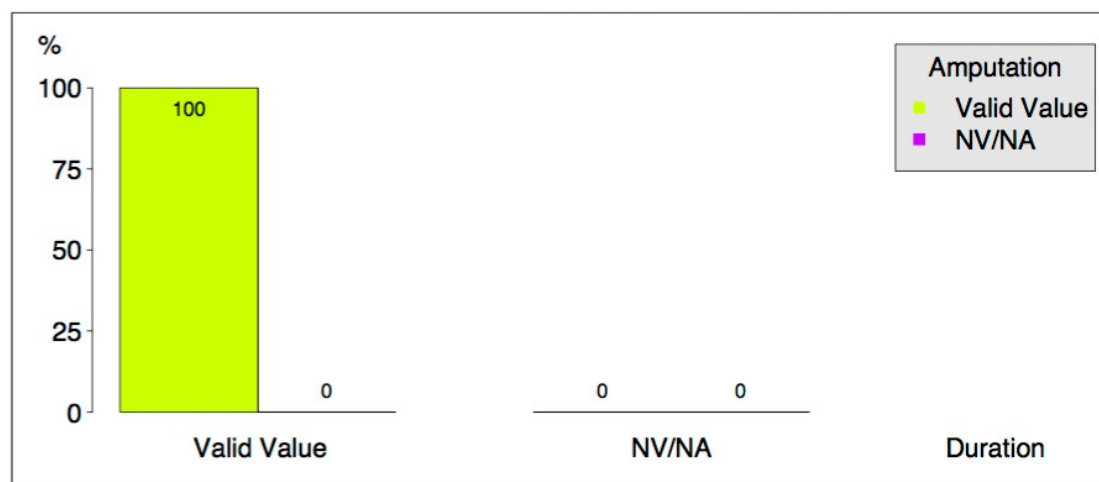
Barplot 2.3.3.2c - Foot Ulcer (by Data Source, Duration = >=20)

2.3.4 Lower extremity amputation

Amputation	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	35394 (100.0)	0(0.0)	35394 (100.0)
NV/NA	0 (0.0)	0(0.0)	0 (0.0)
TOTAL	35394(100.0)	0(0.0)	35394 (100.0)

Table 2.3.4.1 : Amputation (by Duration)

CMH Chi-Square	
Value	Too many cells have 0 obs



Barplot 2.3.4.1 - Amputation (by Duration)

Amputation	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	3 (0.0)	5 (0.0)	12(0.1)	20 (0.1)
No	16766 (100.0)	10215 (100.0)	8393(99.9)	35374 (99.9)
TOTAL	16769(47.4)	10220(28.9)	8405(23.7)	35394 (100.0)

Table 2.3.4.2 : Amputation (by Duration)

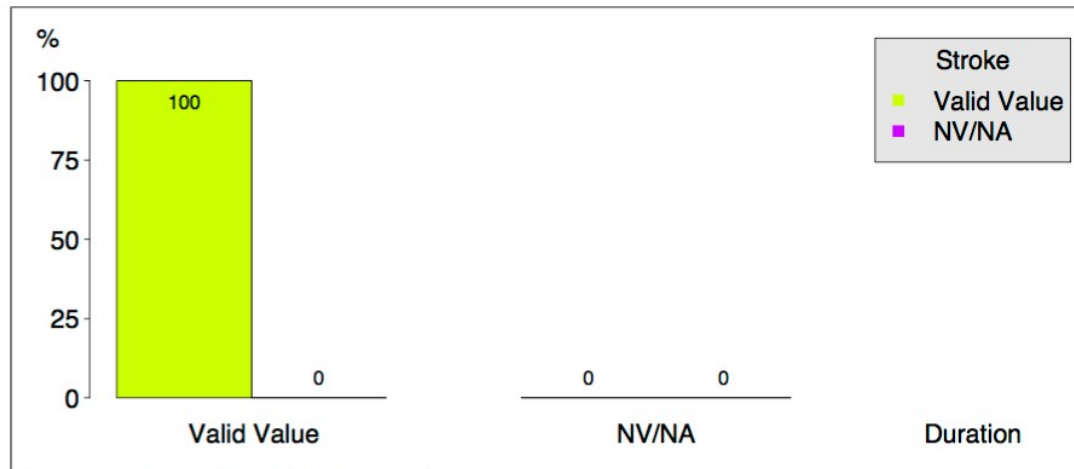
CMH Chi-Square			
Value	15.6073	p.value	df
		4e - 04	2

2.3.5 Stroke

Stroke	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	36164 (100.0)	0(0.0)	36164 (100.0)
NV/NA	0 (0.0)	0(0.0)	0 (0.0)
TOTAL	36164(100.0)	0(0.0)	36164 (100.0)

Table 2.3.5.1 : Stroke (by Duration)

CMH Chi-Square	
Value	Too many cells have 0 obs



Barplot 2.3.5.1 - Stroke (by Duration)

Stroke	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	98 (0.6)	69 (0.7)	82(1.0)	249 (0.7)
No	16991 (99.4)	10380 (99.3)	8544(99.0)	35915 (99.3)
TOTAL	17089(47.3)	10449(28.9)	8626(23.9)	36164 (100.0)

Table 2.3.5.2 : Stroke (by Duration)

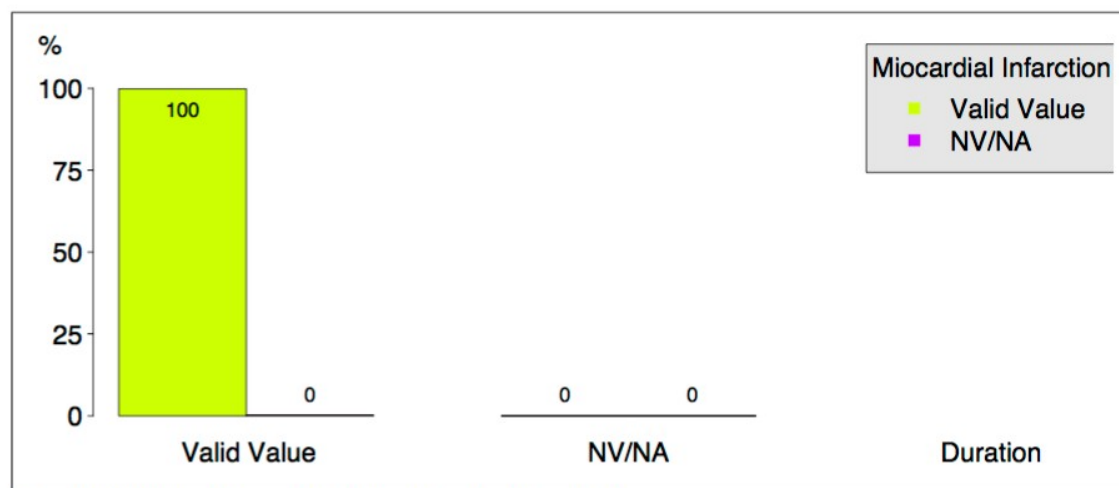
CMH Chi-Square			
Value	12.0951	p.value	0.0024
		df	2

2.3.6 Myocardial infarction

Miocardial Infarction	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	33410 (99.9)	0(0.0)	33410 (99.9)
NV/NA	37 (0.1)	0(0.0)	37 (0.1)
TOTAL	33447(100.0)	0(0.0)	33447 (100.0)

Table 2.3.6.1 : Miocardial Infarction (by Duration)

	CMH Chi-Square	p.value	df
Value	33299.1637	0	1

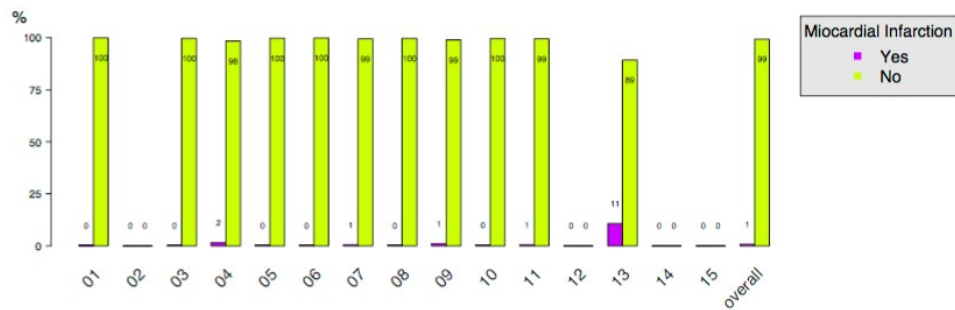


Barplot 2.3.6.1 - Miocardial Infarction (by Duration)

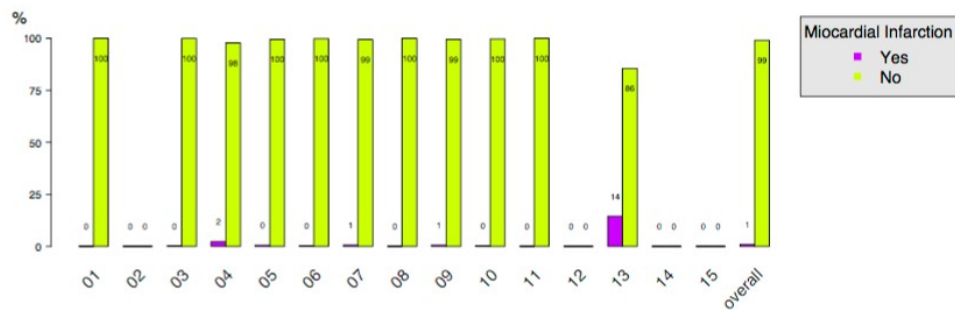
Miocardial Infarction	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	111 (0.7)	91 (1.0)	95(1.2)	297 (0.9)
No	15719 (99.3)	9482 (99.0)	7912(98.8)	33113 (99.1)
TOTAL	15830(47.4)	9573(28.7)	8007(24.0)	33410 (100.0)

Table 2.3.6.2 : Miocardial Infarction (by Duration)

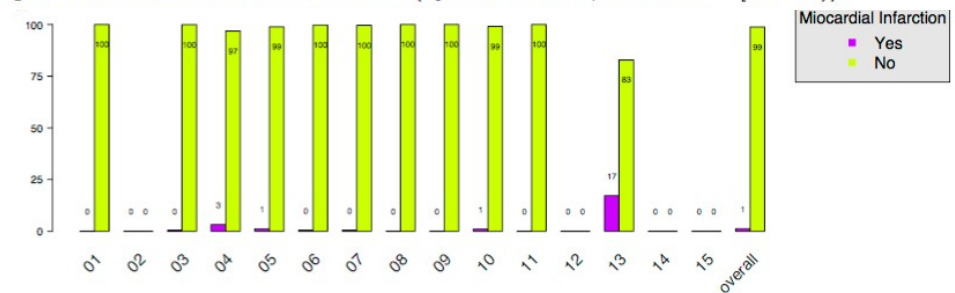
	CMH Chi-Square	p.value	df
Value	14.7903	6e - 04	2



Barplot 2.3.6.2a - Miocardial Infarction (by Data Source, Duration = <10)



Barplot 2.3.6.2b - Miocardial Infarction (by Data Source, Duration = [10 - 20])



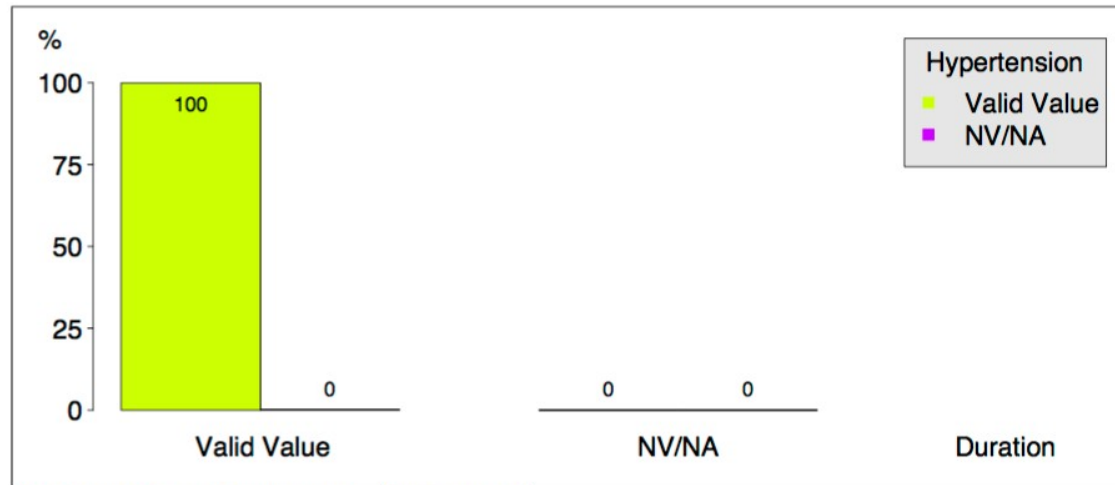
Barplot 2.3.6.2c - Miocardial Infarction (by Data Source, Duration = >=20)

2.3.7 Hypertension

Hypertension	Valid Value (%)	NV/NA (%)	N (%)
Valid Value	37042 (99.9)	0(0.0)	37042 (99.9)
NV/NA	30 (0.1)	0(0.0)	30 (0.1)
TOTAL	37072(100.0)	0(0.0)	37072 (100.0)

Table 2.3.7.1 : Hypertension (by Duration)

	CMH Chi-Square	p.value	df
Value	36952.0971	0	1

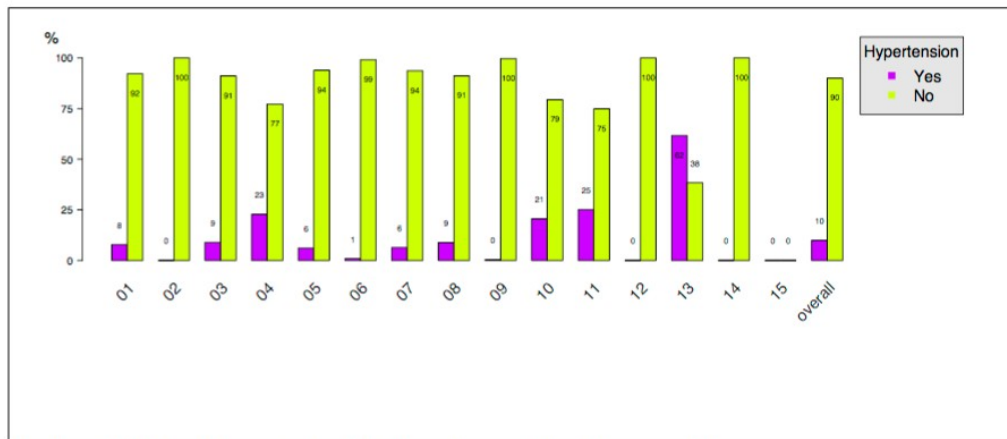


Barplot 2.3.7.1 - Hypertension (by Duration)

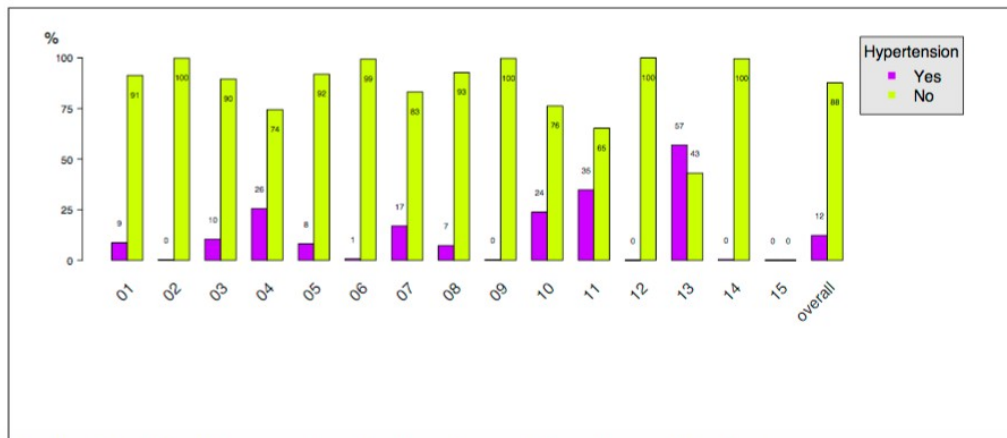
Hypertension	<10 (%)	[10 - 20) (%)	>=20 (%)	N (%)
Yes	1732 (9.9)	1319 (12.3)	1109(12.5)	4160 (11.2)
No	15691 (90.1)	9425 (87.7)	7766(87.5)	32882 (88.8)
TOTAL	17423(47.0)	10744(29.0)	8875(24.0)	37042 (100.0)

Table 2.3.7.2 : Hypertension (by Duration)

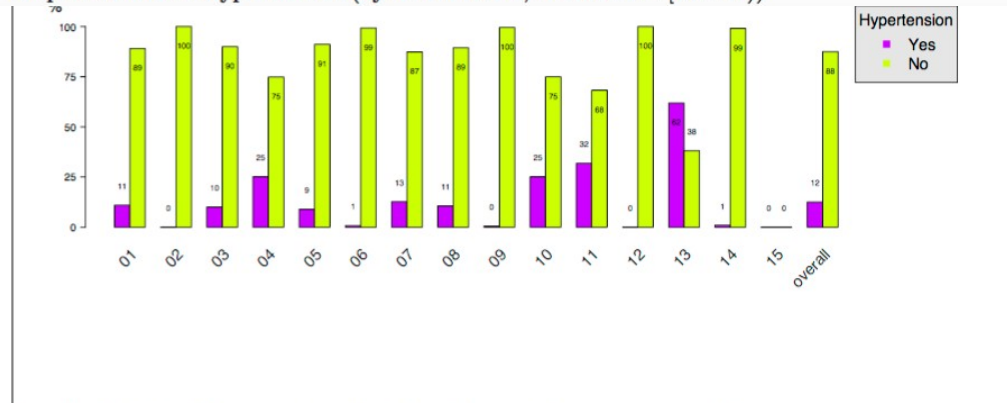
	CMH Chi-Square	p.value	df
Value	55.1119	0	2



Barplot 2.3.7.2a - Hypertension (by Data Source, Duration = <10)



Barplot 2.3.7.2b - Hypertension (by Data Source, Duration = [10 - 20))



Barplot 2.3.7.2c - Hypertension (by Data Source, Duration = >=20)