

## A retrospective epidemiological study of type 1 diabetes mellitus in Wales, UK between 2008 and 2018

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### Abstract

#### Introduction

Studies of prevalence and the demographic profile of type 1 diabetes are challenging because of the relative rarity of the condition, however, these outcomes can be determined using routine healthcare data repositories. Understanding the epidemiology of type 1 diabetes allows for targeted interventions and care of this life-affecting condition.

#### Objectives

To describe the prevalence, incidence and demographics of persons with type 1 diabetes diagnosed in Wales, UK, using the Secure Anonymised Information Linkage (SAIL) Databank.

#### Methods

Data derived from primary and secondary care throughout Wales available in the SAIL Databank were used to identify people with type 1 diabetes to determine the prevalence and incidence of type 1 diabetes over a 10 year period (2008–18) and describe the demographic and clinical characteristics of this population by age, socioeconomic deprivation and settlement type. The seasonal variation in incidence rates was also examined.

#### Results

The prevalence of type 1 diabetes in 2018 was 0.32% in the whole population, being greater in men compared to women (0.35% vs 0.28% respectively); highest in those aged 15–29 years (0.52%) and living in the most socioeconomically deprived areas (0.38%). The incidence of type 1 diabetes over 10 years was 14.0 cases/100,000 people/year for the whole population of Wales. It was highest in children aged 0–14 years (33.6 cases/100,000 people/year) and areas of high socioeconomic deprivation (16.8 cases/100,000 people/year) and least in those aged 45–60 years (6.5 cases/100,000 people/year) and in areas of low socioeconomic deprivation (11.63 cases/100,000 people/year). A seasonal trend in the diagnoses of type 1 diabetes was observed with higher incidence in winter months.

#### Conclusion

This nation-wide retrospective epidemiological study using routine data revealed that the incidence of type 1 diabetes in Wales was greatest in those aged 0–14 years with a higher incidence and prevalence in the most deprived areas. These findings illustrate the need for health-related policies targeted at high deprivation areas to include type 1 diabetes in their remit.

#### Keywords

diabetes mellitus; epidemiology; electronic health records

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## Introduction

Type 1 diabetes mellitus results from an immune-mediated destruction of the insulin-producing cells in the pancreas, typically presenting with symptoms related to raised blood glucose concentrations, including weight loss, excessive thirst and urination and hunger with some cases presenting acutely with the life-threatening metabolic disorder ketoacidosis which may lead to coma and death. Type 1 diabetes requires life-long treatment with exogenous insulin therapy accompanied by blood glucose monitoring. The International Diabetes Federation (IDF) reported in 2019 that over 1.1 million children and young people had type 1 diabetes worldwide, with 129,000 new cases diagnosed each year [1]. In the UK during 2010–2011, the direct cost of caring for people with type 1 diabetes to the National Health Service was £1.0 billion, which is expected to rise to £1.8 billion by 2035–2036. In addition, indirect costs were estimated to be 0.9 billion in 2010–2011, rising to £2.4 billion in 2035–2036 [2].

It is essential to have accurate data on the number of people with type 1 diabetes in order to determine both current and future health care resources required to maintain the health of this highly vulnerable population who are at significant risk of short and long-term complications. Although type 1 diabetes may present at any age it is traditionally regarded as a condition occurring predominantly in childhood, which has been the main focus for the majority of studies reporting prevalence and incidence of type 1 diabetes. These studies have demonstrated that in some countries such as the United States the incidence is rising [3], although in others such as Finland [4], Western Australia [5] and Ireland [6] the reported rate of increase has slowed or even stopped. Studies examining the prevalence, incidence and rate of complications of type 1 diabetes must reflect the fact that type 1 diabetes can present at any age [7]. In the UK the Quality and Outcomes Framework (QoF) combined with the National Paediatric Diabetes Audit [8] provided a dataset which allowed for the estimation of diabetes prevalence and incidence in the entire population [9, 10] with the National Diabetes Audit (NDA) providing an estimate of prevalence in adults [11]. Published reports from the NPDA have shown that in the UK, the incidence of type 1 diabetes in children has remained approximately constant in recent years. There are also local audits available, for example the Brecon cohort, a register of people with type 1 diabetes diagnosed under the age of 16 years in Wales [12]. The availability of large-scale research databanks has made it possible to perform epidemiological research without the need for specially gathered registry data. This study builds upon previous work to develop algorithms to identify incident cases of diabetes in the Clinical Practice Research Datalink [13], the UK IMS disease analyser [14], The Health Improvement Network [15], administrative data from Ontario, Canada [16] and Luxembourg [17] and in the Scottish Care Information-Diabetes Collaboration [18]. These methods typically use coded diagnoses and/or medication prescriptions and laboratory tests to identify cases of diabetes, however, due to the anonymised nature of these data sources and the inherent issues related to routinely collected data, robust data cleaning methods are required to ensure the accuracy of the cohort being studied [19].

Previous work on incident cases of type 1 diabetes has shown that more people are diagnosed in winter months than summer months [27]. This effect appears to be due to periods of cold weather as it persists in Southern hemisphere countries [28] but its underlying cause is not well understood [29]. We will test our cohort to see if we observe a seasonal variation in incident cases.

This retrospective epidemiological study aimed to identify all persons in Wales, diagnosed in both childhood and adulthood, with type 1 diabetes using anonymised, routinely collected healthcare data held in the Secure Anonymised Information Linkage (SAIL) Databank and to compute estimates of the true prevalence and incidence of type 1 diabetes in this population along with the demographic and clinical characteristics.

## Methods

Routine electronic health record data held in the SAIL Databank [20–22] from multiple sources including both primary and secondary care were used for this study. Primary care sources include the Welsh Longitudinal General Practice (WLGP) dataset which covered approximately 80% of the population of Wales over the study period and commenced in 2000, with coverage increasing over time. The data included medications prescribed, laboratory test results and coded diagnoses made by a general practitioner. Inpatient and outpatient hospital records commenced in 1995, covered 100% of Wales and included dates of hospital admissions, diagnoses made and procedures carried out. Demographic and geographical information was drawn from the Welsh Demographic Service (WDS) dataset, which contains administrative data on all persons registered with a primary care practice in Wales. Any event, admission or service received before the index date, which was June 1<sup>st</sup> 2018, was included in the study.

People commonly have multiple coded diagnoses of diabetes recorded in the routine data which may or may not specify a particular type of diabetes. Therefore the following criteria were used to identify people with type 1 diabetes: those with a majority of coded diagnoses of type 1 diabetes in both hospitals and general practice, were assigned a diagnosis of type 1 diabetes if insulin was prescribed within 12 months of the earliest recorded date of diagnosis of diabetes, if insulin was prescribed at least 6 months prior to any oral antidiabetic drug (OAD), if a hospital inpatient episode with a diagnosis of diabetic ketoacidosis (DKA) was recorded, or medical devices commonly used in the care of type 1 diabetes (blood glucose monitors, glucose and ketone test strips) were prescribed on at least 5 occasions within 6 months of diagnosis. People who did not have a majority of coded diagnoses of type 1 diabetes were only assigned a diagnosis of type 1 diabetes if insulin was prescribed within 6 months of the earliest recorded date of diagnosis of diabetes and, if concomitant OAD therapy was prescribed, at least six months after insulin initiation. The only permissible OAD therapies were metformin, sulphonylureas, glucagon-like peptide 1 (GLP-1) agonists or sodium-glucose transport protein 2 (SGLT-2) inhibitor agents. People presenting with type 1 diabetes before 2000 may not be identified by this algorithm since data on

medication prescriptions were not generally available prior to this date, although coded diagnosis data often is available. For this reason, only new diagnoses of type 1 diabetes from 2008 onwards were used for incidence calculations. However, prevalence calculations involved all people living with type 1 diabetes diagnosed at any time.

The date of diagnosis was either the first recorded diagnosis of type 1 diabetes in any dataset, or the earliest recorded prescription of insulin in the WLGP dataset, whichever was earliest. All persons with a code for type 1 diabetes who also had some other pancreatic condition such as cystic fibrosis or pancreatic cancer prior to type 1 diabetes diagnosis were excluded from the cohort. The complete list of relevant diagnosis codes are included in Supplementary Tables 1 and 2. Deprivation was assigned using the Welsh Index of Multiple Deprivation 2011 (WIMD) score quintile. Each Lower layer Super Output Area (LSOA), small geographic areas where the minimum population is 1000 people and the mean population is 1500 people, is assigned a WIMD score quantifying the deprivation in that area [23]. Settlement type (rural, town and urban areas, based on population density [24]) was also derived from each LSOA.

The numbers of people identified with type 1 diabetes over the whole period of data coverage was used to estimate the prevalence and incidence of the condition on the index date. The prevalence was calculated by dividing the number of persons with type 1 diabetes living in Wales (including those diagnosed outside Wales) and registered at a SAIL primary care general practice by the total number of people registered at a SAIL primary care general practice, both on the index date. The incidence was calculated by dividing the number of people newly diagnosed with type 1 diabetes in a calendar year while registered at a SAIL primary care general practice and resident in Wales by the total number of people registered at a SAIL primary care general practice on the 1<sup>st</sup> June of each year. Univariate Poisson regression was used to check for differences between population subgroups with the null hypothesis being that there was an equal probability of having type 1 diabetes in each population subgroup. For each model, only the variable under investigation (WIMD quintile, settlement type, month of diagnosis) was included as the independent variable. The dependent variable was the number of incident persons with T1DM or the number of prevalent persons with T1DM. An offset variable was included in each model to account for the differences in population sizes in the different categories. To evaluate the model fit we computed the ratio of the residual deviance to the degrees of freedom, with a value less than or greater than unity indicating under or over dispersion respectively. Lack of under or over dispersion was taken to imply standard error estimates were reasonable.

To illustrate the seasonal variation of newly-diagnosed cases of type 1 diabetes in people under 18 years of age, we took the number of newly-diagnosed cases of type 1 diabetes in each calendar month in the ten years prior to the index date and computed the mean for each month. To account for the difference in the number of days in each month we further divided each mean number by  $\frac{12n_{\text{month}}}{365.25}$  where  $n_{\text{month}}$  is the number of days in the month. Since there were two leap years during the study period, we took the length of February as 28.2 days. Confidence intervals for prevalence and incidence were computed using Jeffrey's interval [25].

## Results

Demographic characteristics of the population with type 1 diabetes living in Wales during the study period are represented in Table 1. There were 7857 people with type 1 diabetes diagnosed prior to the index date that had records in the WLGP data (see Figure 1), giving an overall prevalence of 0.32% (95% CI 0.31, 0.32). More men ( $n = 4366$ ) than women ( $n = 3491$ ) had type 1 diabetes, with a prevalence 0.35% (95% CI 0.34, 0.36) and 0.28% (95% CI 0.27, 0.29) respectively. 47.3% of people with type 1 diabetes were diagnosed under age 18, whereas 71.5% of the population with type 1 diabetes were diagnosed under the age of 30 years. 95% of type 1 diabetes diagnoses occurred before age 53 (Table 1).

The prevalence of type 1 diabetes was highest in those aged 15–29 years at 0.52% (95% CI 0.50, 0.55). The average incidence in the 10 years prior to the index date was 14.0 cases/100,000 people/year (95% CI 12.5, 15.5), whereas the age group with the highest incidence was those aged 0 to 14 years at 33.6 cases/100,000 people/year (95% CI 28.0, 39.6) (Table 2).

The prevalence of type 1 diabetes was 31.0% higher in the most socially deprived areas when compared to the least deprived areas. Furthermore, all regions that had greater deprivation than the least deprived areas had a higher prevalence of type 1 diabetes. There was also a difference in incidence rates only when comparing regions in the most deprived and least deprived quintiles ( $p = 0.040$ ) (Table 3). The prevalence of type 1 diabetes was higher in urban areas compared to rural areas, with a 14.2% difference. There was no difference however in the observed incidence rates across different settlement types (Table 4).

There was a seasonal trend in the rate of diagnosis of type 1 diabetes in children and young people which was highest during February ( $p = 0.025$ ) and lowest during the months of July ( $p = 0.018$ ) and August ( $p = 0.005$ ) (Figure 2).

## Discussion

We found that the prevalence of type 1 diabetes in people of all ages in Wales was 0.32%. The only prior study we are aware of that investigated type 1 diabetes prevalence in people of all ages used QoF data and found the prevalence to be 0.4% in Wales in 2014 [9, 10], which is slightly higher than our finding. This discrepancy could arise from the criteria adopted in this study which required that persons must have had a recorded prescription of insulin within 12 months of the date they were diagnosed.

The SAIL Databank was established in 2007 and contains data going back to 2000 or earlier, with historic data prior to that depending on the data source and quality of electronic data capture. People diagnosed with type 1 diabetes before 2000 will be unlikely to have their early insulin prescriptions recorded, so were not therefore included in our cohort. In 2015 Holman et al. found a prevalence of any diabetes in Wales of 0.2% when restricted to children and young people under the age of 16 years [10].

Importantly, we discovered that the prevalence of type 1 diabetes was 31.0% higher, and the incidence 42% higher in the most deprived areas compared to areas with the least

Table 1: Demographic information

Statistic	Value
N	7857
Men n (%)	4366 (55.6%)
Population age median (LQ, UQ)	34.5 (23.2, 50.3)
Diabetes duration median (LQ, UQ)	13.5 (6.4, 21.1)
Age at diagnosis median (LQ, UQ)	19.2 (10.6, 32.0)
Percentage diagnosed under 18	47.5%
Percentage diagnosed under 30	71.5%
Percentage diagnosed under 53	95%

Key: LQ - Lower quartile, UQ - Upper quartile.

Figure 1: Flow diagram detailing cohort construction

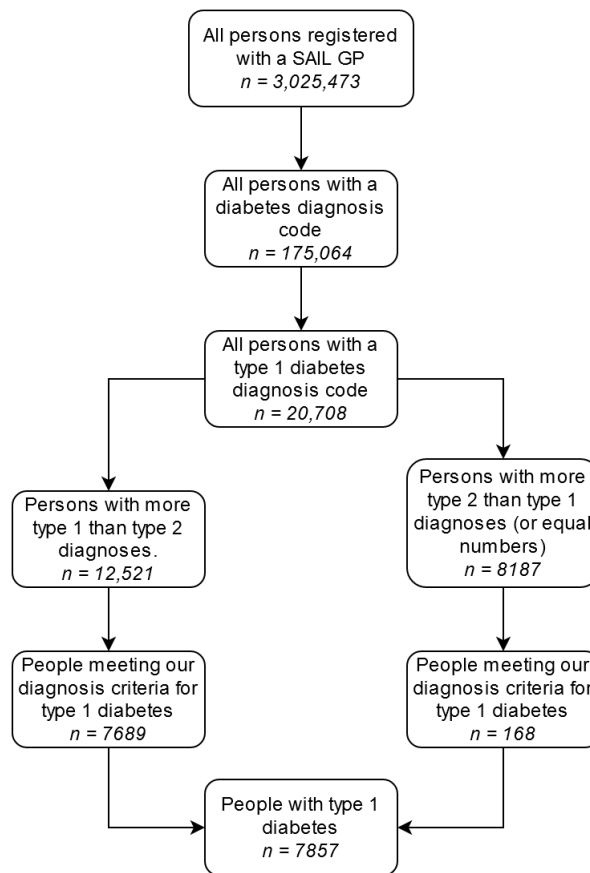


Table 2: The prevalence and incidence of type 1 diabetes by age group up to the age of 60. People with type 1 diabetes aged over 60 were included in the full cohort but not in this table as the numbers were small

Age range	Prevalence % (95% CI)	Incidence/100,000 people/year (95% CI)
0–14	0.18% (0.17, 0.20)	33.55 (28.02, 39.56)
15–29	0.52% (0.50, 0.55)	26.87 (22.32, 31.83)
30–44	0.45% (0.43, 0.47)	13.15 (10.02, 16.70)
45–60	0.33% (0.31, 0.35)	6.49 (4.39, 8.98)

Key: CI - Confidence interval.

deprivation. In contrast to our findings, a study in Finland found a six fold higher incidence of type 1 diabetes in children under 15 years in a population with a lower level of

socioeconomic deprivation [26]. Excessive cleanliness has been hypothesised to explain the greater prevalence of autoimmune conditions such as type 1 diabetes, due to reduced exposure

Table 3: The prevalence and incidence of type 1 diabetes by Welsh Index of Multiple Deprivation (WIMD) quintile, with p-values from a Poisson regression model. The 1<sup>st</sup> WIMD quintile represents the most deprived areas, whereas areas in the 5<sup>th</sup> quintile are the least deprived

WIMD quintile	Prevalence (% 95% CI)	p-value	Incidence (/100,000, 95% CI)	p-value
1	0.38 (0.36, 0.39)	<0.001	16.80 (13.40, 20.59)	0.040
2	0.36 (0.34, 0.37)	<0.001	14.85 (11.55, 18.56)	0.196
3	0.34 (0.32, 0.36)	<0.001	14.24 (11.04, 17.84)	0.344
4	0.32 (0.30, 0.34)	<0.001	12.01 (8.91, 15.57)	0.753
5	0.29 (0.27, 0.30)	Reference	11.63 (8.79, 14.86)	Reference

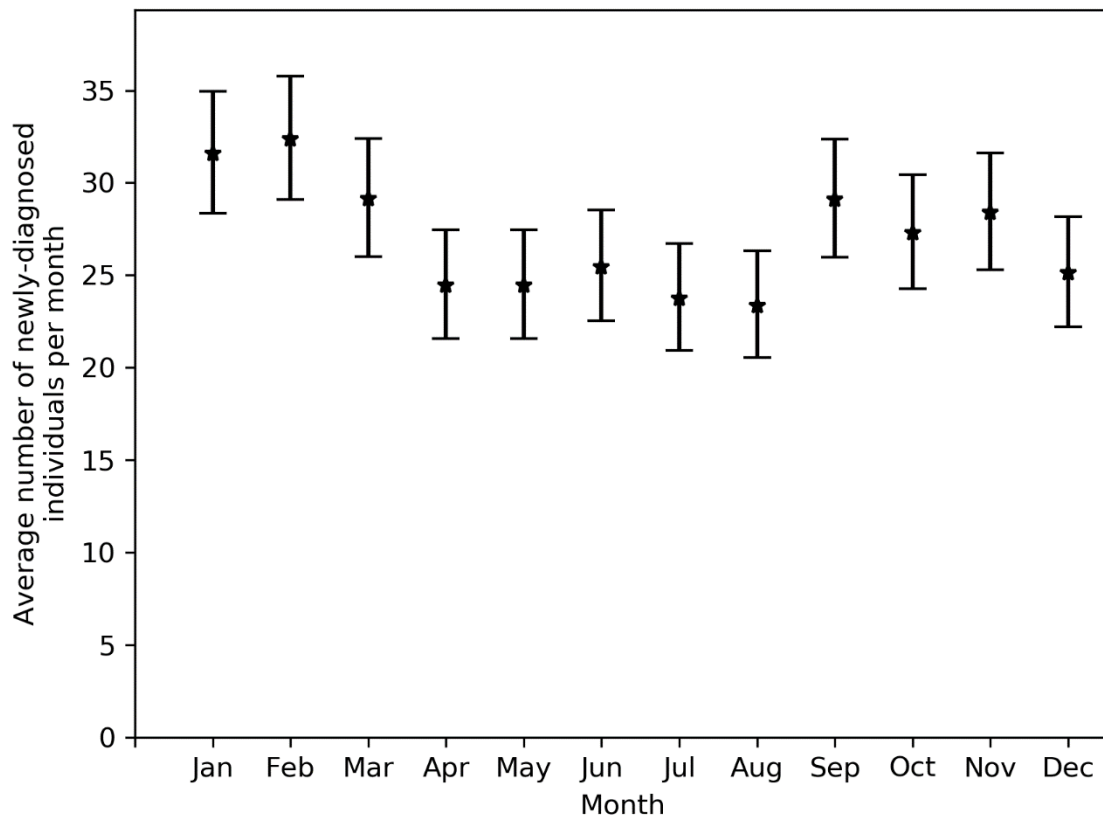
Key: CI - Confidence interval.

Table 4: The prevalence and incidence of type 1 diabetes by settlement type

Settlement type	Prevalence (% 95% CI)	p-value	Incidence (/100,000, 95% CI)	p-value
Rural	0.28 (0.26, 0.29)	<0.001	14.45 (12.66, 16.36)	0.403
Town	0.32 (0.30, 0.34)	<0.001	13.43 (9.99, 17.38)	0.589
Urban	0.31 (0.31, 0.32)	Reference	12.27 (8.80, 16.30)	Reference

Key: CI - Confidence interval.

Figure 2: The mean number of individuals under 18 years of age with newly-diagnosed (i.e. incident) type 1 diabetes per month in each year of the study period. We have normalised the values by the number of days in the month, so that points are comparable



to infectious diseases which would otherwise enhance the immune response. Deprivation defined by the WIMD criteria which were used in this study does include quantification of housing quality, air quality, air emissions and proximity to waste and industrial sites but is not necessarily a good proxy for the cleanliness of the exposed environment [23]. However, comparing different measures of deprivation is problematic, due to the use of different indicators to quantify deprivation.

The prevalence of type 1 diabetes was highest in urban areas and it is likely these two observations are related, as settlement type and deprivation quintile are highly correlated. These findings illustrate the need for programmes aimed at areas of highest deprivation to include type 1 diabetes in their remit.

There was a seasonal variation in the diagnosis of type 1 diabetes, with fewer diagnoses in July and August with a peak during February. The size of the seasonal effect

observed in this study is in broad agreement with centres of comparable latitude as seen in a multicentre European study [27]. The pattern of increased winter diagnoses persists in both northern and southern hemispheres, but unfortunately there are only a few studies reporting results from the southern hemisphere [28]. Several causes for this seasonal variation have been proposed including seasonal variations in infectious disease, sun or average temperature exposure or patterns of diet and exercise but currently the mechanism is not fully understood [29].

There are some limitations to our study. Approximately 80% of people had their GP data available in the SAIL Databank which are not always complete. Also routine databanks only provide access to coded data so free text records are not available for error checking or adjudication and importantly, routine databanks only contain anonymised data preventing follow up to resolve any queries. However, data linkage is a growing field of study in medical research, and new datasets that provide a more detailed picture of people with type 1 diabetes are being added to the SAIL Databank and other repositories on a regular basis. The method used in this study to designate people with type 1 diabetes allowed for a twelve month period from initial diagnosis to receiving a first prescription for insulin in primary care to accommodate for the time between diagnosis (usually in secondary care) and medication prescriptions recorded in primary care. Information on medication prescriptions in secondary care was not available in the SAIL Databank for the purposes of this study. In addition, those people misdiagnosed as having type 2 diabetes and given oral medication prior to the correct diagnosis being established and commencement of insulin therapy will be excluded from the study cohort as not having type 1 diabetes by our chosen algorithm. Also, if the person has type 2 diabetes but is misdiagnosed as type 1 diabetes and the error is not rectified within 12 months, the algorithm would erroneously identify them as having type 1 diabetes. Given that our prevalence findings are broadly in agreement with previous work on the subject it is likely any misclassification error is small. Furthermore, misdiagnosing type 1 diabetes as type 2 diabetes is relatively unlikely, and our lower estimate of prevalence compared with the work of Holman et al. [9, 10] suggests more false negatives than false positives. People relocating into Wales and registering with a GP will be considered a new diagnosis, which would result in a small overestimate in the incidence of type 1 diabetes. Migration within Wales however is correctly accounted for and does not erroneously increase the incidence estimate.

This most recent epidemiological study of people with type 1 diabetes, based on defined diagnostic criteria, in a population of all ages living in Wales has employed the resources of the SAIL Databank, a repository of anonymised routine medical data. This has made it possible to calculate the prevalence and incidence of type 1 diabetes over the stated study period and provide a description of the population being surveyed. This study found that in Wales in 2018 the prevalence of type 1 diabetes was 0.32%, with a higher prevalence in men than women (0.35% vs. 0.28%), highest in people aged 15–34 years at 0.52% and higher in the most deprived areas at 0.38%. The incidence of type 1 diabetes for children and young people was higher in the winter months of January and February, and lowest in the months of July and August. This study provides

important additional epidemiological and clinical information about the status of type 1 diabetes in Wales with respect to its prevalence and incidence in relationship to age, gender and socioeconomic status. The findings provide essential evidence to generate future health care policies better able to define and target the needs of this vulnerable group and also encourage the introduction of preventative strategies. This study also forms the basis for future epidemiological studies to monitor the impact of different interventions in clinical care and socioeconomic factors especially the devastating influence of deprivation in Wales. Lessons learnt from conducting this study will result in more comprehensive and improved future epidemiological studies which will be able to provide more accurate estimates of the prevalence and incidence of type 1 diabetes in Wales. Using similar methodology within and between countries/regions will also allow more meaningful comparisons to be made.

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This study makes use of anonymised data held in the SAIL Databank, which is part of the national e-health records research infrastructure for Wales. We would like to acknowledge all the data providers who make anonymised data available for research.

## Statement on conflicts of interest

None of the authors expressed any conflict of interest.

## Ethics statement

This study was reviewed by the independent Information Governance Review Panel (IGRP) of the SAIL Databank and approved under the ID: 0493. Ethical approval was not required since only anonymised data was used.

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## Abbreviations

DKA:	Diabetic Ketoacidosis
GLP-1:	Glucagon-like Peptide 1
IDF:	International Diabetes Federation
LSOA:	Lower Layer Super Output Area
OAD:	Oral Antidiabetic Drug
QoF:	Quality and Outcomes Framework
SAIL:	Secure Anonymised Information Linkage
SGLT-2:	Sodium Glucose Transport Inhibitor
WIMD:	Welsh Index of Multiple Deprivation
WLGP:	Welsh Longitudinal General Practice





Supplementary table 1: Diagnosis codes

READ_CD	Description	TYPE_NUM
C1000	Diabetes mellitus, juvenile type, with no mention of complication	1
C1010	Type 1 diabetes mellitus with ketoacidosis	1
C1020	Diabetes mellitus, juvenile type, with hyperosmolar coma	1
C1030	Type 1 diabetes mellitus with ketoacidotic coma	1
C1040	Diabetes mellitus, juvenile type, with renal manifestation	1
C1050	Diabetes mellitus, juvenile type, with ophthalmic manifestation	1
C1060	Diabetes mellitus, juvenile type, with neurological manifestation	1
C1070	Diabetes mellitus, juvenile type, with peripheral circulatory disorder	1
C1080	Type 1 diabetes mellitus with renal complications	1
C1082	Type 1 diabetes mellitus with neurological complications	1
C1085	Type 1 diabetes mellitus with ulcer	1
C1087	Type 1 diabetes mellitus with retinopathy	1
C1088	Type 1 diabetes mellitus - poor control	1
C1089	Type 1 diabetes mellitus maturity onset	1
C10E.	Type 1 diabetes mellitus	1
C10E0	Type 1 diabetes mellitus with renal complications	1
C10E1	Type 1 diabetes mellitus with ophthalmic complications	1
C10E2	Type 1 diabetes mellitus with neurological complications	1
C10E3	Type 1 diabetes mellitus with multiple complications	1
C10E4	Unstable type 1 diabetes mellitus	1
C10E5	Type 1 diabetes mellitus with ulcer	1
C10E6	Type 1 diabetes mellitus with gangrene	1
C10E7	Type 1 diabetes mellitus with retinopathy	1
C10E8	Type 1 diabetes mellitus - poor control	1
C10E9	Type 1 diabetes mellitus maturity onset	1
C10EA	Type 1 diabetes mellitus without complication	1
C10EB	Type 1 diabetes mellitus with mononeuropathy	1
C10EC	Type 1 diabetes mellitus with polyneuropathy	1
C10ED	Type 1 diabetes mellitus with nephropathy	1
C10EE	Type 1 diabetes mellitus with hypoglycaemic coma	1
C10EF	Type 1 diabetes mellitus with diabetic cataract	1
C10EG	Type 1 diabetes mellitus with peripheral angiopathy	1
C10EH	Type 1 diabetes mellitus with arthropathy	1
C10EJ	Type 1 diabetes mellitus with neuropathic arthropathy	1
C10EK	Type 1 diabetes mellitus with persistent proteinuria	1
C10EL	Type 1 diabetes mellitus with persistent microalbuminuria	1
C10EM	Type 1 diabetes mellitus with ketoacidosis	1
C10EN	Type 1 diabetes mellitus with ketoacidotic coma	1
C10EP	Type 1 diabetes mellitus with exudative maculopathy	1
C10EQ	Type 1 diabetes mellitus with gastroparesis	1
C10y0	Diabetes mellitus, juvenile type, with other specified manifestation	1
C10z0	Diabetes mellitus, juvenile type, with unspecified complication	1
L180A	Pre-existing type 1 diabetes mellitus in pregnancy	1
C108.	Insulin dependent diabetes mellitus	1
C1081	Insulin-dependent diabetes mellitus with ophthalmic complications	1
C1083	Insulin-dependent diabetes mellitus with multiple complications	1
C1084	Unstable insulin dependent diabetes mellitus	1
C1086	Insulin-dependent diabetes mellitus with gangrene	1
C108A	Insulin-dependent diabetes without complication	1
C108B	Insulin dependent diabetes mellitus with mononeuropathy	1
C108C	Insulin dependent diabetes mellitus with polyneuropathy	1
C108D	Insulin dependent diabetes mellitus with nephropathy	1
C108E	Insulin dependent diabetes mellitus with hypoglycaemic coma	1
C108F	Insulin dependent diabetes mellitus with diabetic cataract	1
C108G	Insulin dependent diabetes mellitus with peripheral angiopathy	1
C108H	Insulin dependent diabetes mellitus with arthropathy	1

Continued

Supplementary table 1: Continued

READ_CD	Description	TYPE_NUM
C108J	Insulin dependent diabetes mellitus with neuropathic arthropathy	1
L1805	Pre-existing diabetes mellitus, insulin-dependent	1
X40J4	IDDM - Insulin-dependent diabetes mellitus	1
C1011	Diabetes mellitus, adult onset, with ketoacidosis	2
C1021	Diabetes mellitus, adult onset, with hyperosmolar coma	2
C1031	Diabetes mellitus, adult onset, with ketoacidotic coma	2
C1041	Diabetes mellitus, adult onset, with renal manifestation	2
C1051	Diabetes mellitus, adult onset, with ophthalmic manifestation	2
C1061	Diabetes mellitus, adult onset, with neurological manifestation	2
C1071	Diabetes mellitus, adult onset, with peripheral circulatory disorder	2
C109.	Non-insulin dependent diabetes mellitus	2
C1090	Type 2 diabetes mellitus with renal complications	2
C1091	Non-insulin-dependent diabetes mellitus with ophthalmic complications	2
C1092	Type 2 diabetes mellitus with neurological complications	2
C1093	Type 2 diabetes mellitus with multiple complications	2
C1094	Non-insulin-dependent diabetes mellitus with ulcer	2
C1095	Type 2 diabetes mellitus with gangrene	2
C1096	Non-insulin-dependent diabetes mellitus with retinopathy	2
C1097	Type 2 diabetes mellitus - poor control	2
C1099	Non-insulin-dependent diabetes mellitus without complication	2
C109A	Non-insulin dependent diabetes mellitus with mononeuropathy	2
C109B	Non-insulin dependent diabetes mellitus with polyneuropathy	2
C109C	Non-insulin dependent diabetes mellitus with nephropathy	2
C109D	Non-insulin dependent diabetes mellitus with hypoglycaemic coma	2
C109E	Non-insulin dependent diabetes mellitus with diabetic cataract	2
C109F	Non-insulin-dependent diabetes mellitus with peripheral angiopathy	2
C109G	Non-insulin dependent diabetes mellitus with arthropathy	2
C109H	Non-insulin dependent diabetes mellitus with neuropathic arthropathy	2
C109J	Insulin treated Type 2 diabetes mellitus	2
C109K	Hyperosmolar non-ketotic state in type 2 diabetes mellitus	2
C10D.	Diabetes mellitus autosomal dominant type 2	2
C10F.	Type 2 diabetes mellitus	2
C10F0	Type 2 diabetes mellitus with renal complications	2
C10F1	Type 2 diabetes mellitus with ophthalmic complications	2
C10F2	Type 2 diabetes mellitus with neurological complications	2
C10F3	Type 2 diabetes mellitus with multiple complications	2
C10F4	Type 2 diabetes mellitus with ulcer	2
C10F5	Type 2 diabetes mellitus with gangrene	2
C10F6	Type 2 diabetes mellitus with retinopathy	2
C10F7	Type 2 diabetes mellitus - poor control	2
C10F9	Type 2 diabetes mellitus without complication	2
C10FA	Type 2 diabetes mellitus with mononeuropathy	2
C10FB	Type 2 diabetes mellitus with polyneuropathy	2
C10FC	Type 2 diabetes mellitus with nephropathy	2
C10FD	Type 2 diabetes mellitus with hypoglycaemic coma	2
C10FE	Type 2 diabetes mellitus with diabetic cataract	2
C10FF	Type 2 diabetes mellitus with peripheral angiopathy	2
C10FG	Type 2 diabetes mellitus with arthropathy	2
C10FH	Type 2 diabetes mellitus with neuropathic arthropathy	2
C10FJ	Insulin treated Type 2 diabetes mellitus	2
C10FK	Hyperosmolar non-ketotic state in type 2 diabetes mellitus	2
C10FL	Type 2 diabetes mellitus with persistent proteinuria	2
C10FM	Type 2 diabetes mellitus with persistent microalbuminuria	2
C10FN	Type 2 diabetes mellitus with ketoacidosis	2
C10FP	Type 2 diabetes mellitus with ketoacidotic coma	2
C10FQ	Type 2 diabetes mellitus with exudative maculopathy	2
C10FR	Type 2 diabetes mellitus with gastroparesis	2

Continued

Supplementary table 1: Continued

READ_CD	Description	TYPE_NUM
C10y1	Diabetes mellitus, adult onset, with other specified manifestation	2
C10z1	Diabetes mellitus, adult onset, with unspecified complication	2
L1806	Pre-existing diabetes mellitus, non-insulin-dependent	2
L180B	Pre-existing type 2 diabetes mellitus in pregnancy	2
X40J5	Diabetes mellitus - adult onset	2
X40J6	Insulin treated non-insulin dependent diabetes mellitus	2
C1001	Maturity onset diabetes	
L180.	Diabetes mellitus during pregnancy, childbirth and the puerperium	
L1800	Diabetes mellitus - unspecified whether during pregnancy or the puerperium	
L1802	Diabetes mellitus in the puerperium - baby delivered during current episode of care	
L1804	Diabetes mellitus in the puerperium - baby delivered during previous episode of care	
L1808	GDM - Gestational diabetes mellitus	
L1809	Gestational diabetes mellitus	
L180z	Diabetes mellitus during pregnancy, childbirth or the puerperium NOS	
Q44B.	Syndrome of infant of mother with gestational diabetes	
C10A.	Malnutrition-related diabetes mellitus	
C10A0	Malnutrition-related diabetes mellitus with coma	
C10A1	Malnutrition-related diabetes mellitus with ketoacidosis	
C10A2	Malnutrition-related diabetes mellitus with renal complications	
C10A3	Malnutrition-related diabetes mellitus with ophthalmic complications	
C10A4	Malnutrition-related diabetes mellitus with neurological complications	
C10A5	Malnutrition-related diabetes mellitus with peripheral circulatory complications	
C10A6	Malnutrition-related diabetes mellitus with multiple complications	
C10A7	Malnutrition-related diabetes mellitus without complications	
C10AW	Malnutrition-related diabetes mellitus with unspecified complications	
C10AX	Malnutrition-related diabetes mellitus with other specified complications	
Cyu21	[X]Malnutrition-related diabetes mellitus with other specified complications	
Cyu22	[X]Malnutrition-related diabetes mellitus with unspecified complications	
L1807	Pre-existing malnutrition-related diabetes mellitus	
X40J8	Malnutrition-related diabetes mellitus - fibrocalculous	
X40J9	Malnutrition-related diabetes mellitus - protein-deficient	
C10ER	Latent autoimmune diabetes mellitus in adult	
C10Q.	Maturity onset diabetes of the young type 5	
XSETH	Maturity onset diabetes mellitus in young	
XacoB	Maturity onset diabetes of the young type 5	
66A3.	Diabetic on diet only	
66A4.	Diabetic on oral treatment	
66A5.	Diabetic on insulin	
66AJ1	[Brittle] and/or [labile diabetes]	
66o2.	Diabetic on non-insulin injectable medication	
66o5.	Diabetic on oral treatment and glucagon-like peptide 1 receptor agonist	
66o6.	Diabetic on insulin and glucagon-like peptide 1 receptor agonist	
C10..	Diabetes mellitus	
C100.	Diabetes mellitus with no mention of complication	
C100z	Diabetes mellitus NOS with no mention of complication	
C101.	Diabetes mellitus with ketoacidosis	
C101y	Other specified diabetes mellitus with ketoacidosis	
C101z	Diabetes mellitus NOS with ketoacidosis	
C102.	Diabetes mellitus with hyperosmolar coma	
C102z	Diabetes mellitus NOS with hyperosmolar coma	
C103.	Diabetes mellitus with ketoacidotic coma	
C103y	Other specified diabetes mellitus with coma	
C103z	Diabetes mellitus NOS with ketoacidotic coma	
C104.	Diabetic nephropathy	
C104y	Other specified diabetes mellitus with renal complications	
C104z	Diabetes mellitus with nephropathy NOS	
C105.	Diabetes mellitus with ophthalmic manifestation	



Continued

Supplementary table 1: Continued

READ_CD	Description	TYPE_NUM	
C105y	Other specified diabetes mellitus with ophthalmic complications		
C105z	Diabetes mellitus NOS with ophthalmic manifestation		
C106.	Diabetes mellitus with neuropathy		
C106y	Other specified diabetes mellitus with neurological complications		
C106z	Diabetes mellitus NOS with neurological manifestation		
C107.	Diabetes mellitus with gangrene		
C1072	Diabetes mellitus, adult with gangrene		
C107y	Other specified diabetes mellitus with peripheral circulatory complications		
C107z	Diabetes mellitus NOS with peripheral circulatory disorder		
C108y	Other specified diabetes mellitus with multiple complications		
C108z	Unspecified diabetes mellitus with multiple complications		
C10B.	Diabetes mellitus induced by steroids		
C10B0	Steroid-induced diabetes mellitus without complication		
C10C.	Diabetes mellitus autosomal dominant		
C10FS	Maternally inherited diabetes mellitus		
C10H.	Diabetes mellitus induced by non-steroid drugs		
C10H0	Diabetes mellitus induced by non-steroid drugs without complication		
C10M.	Lipoatrophic diabetes mellitus		
C10M0	Lipoatrophic diabetes mellitus without complication		
C10y.	Diabetes mellitus with other specified manifestation		
C10yy	Other specified diabetes mellitus with other specified complications		
C10yz	Diabetes mellitus NOS with other specified manifestation		
C10z.	Diabetes mellitus with unspecified complication		
C10zy	Other specified diabetes mellitus with unspecified complications		
C10zz	Diabetes mellitus NOS with unspecified complication		
C11y0	Steroid-induced diabetes		
Cyu2.	[X]Diabetes mellitus		
Cyu20	[X]Other specified diabetes mellitus		
Cyu23	[X]Unspecified diabetes mellitus with renal complications		
L1801	Diabetes mellitus during pregnancy - baby delivered		
L1803	Diabetes mellitus during pregnancy - baby not yet delivered		
L180X	Pre-existing diabetes mellitus, unspecified		
Lyu29	[X]Pre-existing diabetes mellitus, unspecified		
Q440.	Maternal diabetes syndrome		
Q441.	Neonatal diabetes mellitus		
X40J7	Jamaica type diabetes		
XE10G	Diabetes mellitus with renal manifestation		
XE10H	Diabetes mellitus with neurological manifestation		
XE10I	Diabetes mellitus with peripheral circulatory disorder		
XE12M	Diabetes with other complications		
ICD10_CODE	Description	Modifier	TYPE_NUM
E10	Type 1 diabetes mellitus		1
E100	Type 1 diabetes mellitus	with coma	1
E101	Type 1 diabetes mellitus	with ketoacidosis	1
E102	Type 1 diabetes mellitus	with renal complications	1
E103	Type 1 diabetes mellitus	with ophthalmic complications	1
E104	Type 1 diabetes mellitus	with neurological complications	1
E105	Type 1 diabetes mellitus	with peripheral circulatory complications	1
E106	Type 1 diabetes mellitus	with other specified complications	1
E107	Type 1 diabetes mellitus	with multiple complications	1
E108	Type 1 diabetes mellitus	with unspecified complications	1
E109	Type 1 diabetes mellitus	without complications	1
E11	Type 2 diabetes mellitus		2
E110	Type 2 diabetes mellitus	with coma	2
E111	Type 2 diabetes mellitus	with ketoacidosis	2
E112	Type 2 diabetes mellitus	with renal complications	2

Continued

Supplementary table 1: Continued

ICD10_CODE	Description	Modifier	TYPE_NUM
E113	Type 2 diabetes mellitus	with ophthalmic complications	2
E114	Type 2 diabetes mellitus	with neurological complications	2
E115	Type 2 diabetes mellitus	with peripheral circulatory complcaitions	2
E116	Type 2 diabetes mellitus	with other spicified complications	2
E117	Type 2 diabetes mellitus	with multiple complications	2
E118	Type 2 diabetes mellitus	with unspecified complications	2
E119	Type 2 diabetes mellitus	without complications	2
E12	Malnutrition related diabetes mellitus		
E120	Malnutrition related diabetes mellitus	with coma	
E121	Malnutrition related diabetes mellitus	with ketoacidosis	
E122	Malnutrition related diabetes mellitus	with renal complications	
E123	Malnutrition related diabetes mellitus	with ophthalmic complications	
E124	Malnutrition related diabetes mellitus	with neurological complications	
E125	Malnutrition related diabetes mellitus	with peripheral circulatory complcaitions	
E126	Malnutrition related diabetes mellitus	with other spicified complications	
E127	Malnutrition related diabetes mellitus	with multiple complications	
E128	Malnutrition related diabetes mellitus	with unspecified complications	
E129	Malnutrition related diabetes mellitus	without complications	
E13	Other specified diabetes mellitus		
E130	Other specified diabetes mellitus	with coma	
E131	Other specified diabetes mellitus	with ketoacidosis	
E132	Other specified diabetes mellitus	with renal complications	
E133	Other specified diabetes mellitus	with ophthalmic complications	
E134	Other specified diabetes mellitus	with neurological complications	
E135	Other specified diabetes mellitus	with peripheral circulatory complcaitions	
E136	Other specified diabetes mellitus	with other spicified complications	
E137	Other specified diabetes mellitus	with multiple complications	
E138	Other specified diabetes mellitus	with unspecified complications	
E139	Other specified diabetes mellitus	without complications	
E14	Unspecified diabetes mellitus		
E140	Unspecified diabetes mellitus	with coma	
E141	Unspecified diabetes mellitus	with ketoacidosis	
E142	Unspecified diabetes mellitus	with renal complications	
E143	Unspecified diabetes mellitus	with ophthalmic complications	
E144	Unspecified diabetes mellitus	with neurological complications	
E145	Unspecified diabetes mellitus	with peripheral circulatory complcaitions	
E146	Unspecified diabetes mellitus	with other spicified complications	
E147	Unspecified diabetes mellitus	with multiple complications	
E148	Unspecified diabetes mellitus	with unspecified complications	
E149	Unspecified diabetes mellitus	without complications	
O24	Diabetes mellitus in pregnancy		
O240	Diabetes mellitus in pregnancy: Pre-existing diabetes mellitus, type 1		1
O241	Diabetes mellitus in pregnancy: Pre-existing diabetes mellitus, type 2		2
O242	Diabetes mellitus in pregnancy: Pre-existing malnutrition-related diabetes mellitus		
O243	Diabetes mellitus in pregnancy: Pre-existing diabetes mellitus, unspecified		
O244	Diabetes mellitus arising in pregnancy		
O249	Diabetes mellitus in pregnancy, unspecified		
P700	Syndrome of infant of mother with gestational diabetes		
P702	Neonatal diabetes mellitus		



Supplementary table 2: Medication codes

READ_CD	Description
f1...	Short-acting insulin
f11..	*SOLUBLE INSULIN
f111.	INSULIN 100 iu/mL injection 10 mL
f112.	*HYPURIN injection 10 mL
f12..	Soluble neutral insulin
f121.	NEUTRAL INSULIN 100 iu/mL injection 10 mL
f122.	HYPURIN NEUTRAL 100 iu/mL injection 10 mL
f123.	Neusulin 100 iu/mL injection vial
f124.	Quicksol 100 iu/mL injection vial
f125.	Velosulin 100 iu/mL injection 10 mL
f126.	VELOSULIN CARTRIDGE 100 iu/mL injection 5.7 mL
f127.	HUMAN ACTRAPID 100 iu/mL injection 10 mL
f128.	HUMAN ACTRAPID 100 iu/mL penfill cartridges
f129.	Human Velosulin 100 iu/mL injection 10 mL
f12A.	HUMAN ACTRAPID 100 iu/mL penfill cartridges 1.5 mL
f12B.	HUMAN ACTRAPID 100 iu/mL preloaded injection pen 3 mL
f12C.	Humaject S 100 iu/mL prefilled pen
f12D.	Pork Actrapid 100 iu/mL injection 10 mL
f12E.	Neutral insulin 100 iu/mL injection cartridge
f12F.	HYPURIN BOVINE NEUTRAL 100 iu/mL injection cartridge 1.5 mL
f12G.	HYPURIN PORCINE NEUTRAL 100 iu/mL injection cartridge 1.5 mL
f12H.	Hypurin Bovine Neutral 100 iu/mL injection 10 mL
f12I.	Hypurin Porcine Neutral 100 iu/mL injection 10 mL
f12J.	Actrapid (human) Penfill 100 iu/mL cartridge 3 mL
f12K.	PORK ACTRAPID 100 iu/mL injection 10 mL
f12L.	INSUMAN RAPID 100 iu/mL injection vials 5 mL
f12M.	Insuman Rapid 100 iu/mL injection cartridge 3 mL
f12N.	BD ULTRA PEN 3.0 mL 1 unit device
f12P.	BD ULTRA PEN 1.5 mL 1 unit device
f12Q.	Insuman Rapid OptiSet 100 iu/mL prefilled pen 3 mL
f12R.	Human Velosulin (pyr) 100 iu/mL injection 10 mL
f12S.	Hypurin Bovine Neutral 100 iu/mL injection cartridge 3 mL
f12T.	Hypurin Porcine Neutral 100 iu/mL injection cartridge 3 mL
f12U.	EXUBERA 1 mg powder for inhalation
f12V.	EXUBERA 3 mg powder for inhalation
f12W.	HUMAN INSULIN 1 mg powder for inhalation
f12X.	HUMAN INSULIN 3 mg powder for inhalation
f12Y.	INSUMAN INFUSAT 100 iu/mL soln for inj cartridges 3.15 mL
f12Z.	INSUMAN INFUSAT 100 iu/mL solution for injection vials 10 mL
f12a.	Humulin S 100 iu/mL injection 10 mL
f12b.	*NOVOPEN
f12c.	*PENJECT
f12d.	PUR-IN NEUTRAL 100 iu/mL vials 10 mL
f12e.	PUR-IN NEUTRAL 100 iu/mL cartridges 3 mL
f12f.	*AUTOPEN
f12g.	HUMULIN S 100 iu/mL cartridges 1.5 mL
f12h.	NovoPen II device
f12i.	*BD PEN device
f12j.	*PUR-IN PEN device
f12k.	*PUR-IN PEN 1 device
f12m.	*PUR-IN PEN 2 device
f12n.	*PUR-IN PEN 4 device
f12p.	Diapen 1 device
f12q.	Diapen 2 device
f12r.	NovoPen I device
f12s.	Humulin S 100 iu/mL cartridges 3 mL
f12t.	*AUTOPEN 1.5 mL one unit device



Continued

Supplementary table 2: Continued

READ_CD	Description
f12u.	*AUTOPEN 1.5 mL two unit device
f12v.	*AUTOPEN 3 mL two unit device
f12y.	HUMAN INSULIN 100 units/mL injection cartridge
f12z.	Human insulin 100 iu/mL injection vial
f13..	Insulin lispro
f131.	INSULIN LISPRO 100 iu/mL vials
f132.	HUMALOG 100 iu/mL injection 10 mL
f133.	INSULIN LISPRO 100 iu/mL cartridges
f134.	Humalog 100 iu/mL cartridges 1.5 mL
f135.	Humalog 100 iu/mL cartridge 3 mL
f136.	Insulin lispro 100 iu/mL prefilled pen
f137.	Humalog-Pen 100 iu/mL prefilled pen 3 mL
f138.	HUMALOG KWIKPEN 100 iu/mL prefilled pen 3 mL
f139.	HUMALOG KWIKPEN 200 iu/mL prefilled pen 3 mL
f13A.	INSULIN LISPRO 200 iu/mL prefilled pen
f14..	Insulin aspart
f141.	NOVORAPID 100 units/mL injection vial
f142.	NovoRapid NovoLet 100 units/mL prefilled syringe 3 mL
f143.	NovoRapid Penfill 100 units/mL cartridge 3 mL
f144.	NOVORAPID FLEXPEN 100 units/mL prefilled pen 3 mL
f145.	NOVORAPID FLEXTOUCH 100 units/mL soln for injection pen 3 mL
f146.	NOVORAPID PUMPCART 100 units/mL soln for inj cartridges 1.6 mL
f14w.	INSULIN ASPART 100 units/mL prefilled pen
f14x.	Insulin aspart 100 units/mL injection vial
f14y.	INSULIN ASPART 100 units/mL prefilled syringe
f14z.	INSULIN ASPART 100 units/mL cartridges
f15..	INSULIN GLULISINE
f151.	Apidra 100 iu/mL injection vials 10 mL
f152.	APIDRA 100 iu/mL injection cartridges 3 mL
f153.	Apidra 100 iu/mL OptiSet prefilled pen 3 mL
f154.	APIDRA 100 iu/mL OptiClik cartridges 3 mL
f155.	APIDRA 100 iu/mL SoloStar prefilled pen 3 mL
f15x.	Insulin glulisine 100 iu/mL injection prefilled pen
f15y.	INSULIN GLULISINE 100 iu/mL injection cartridges
f15z.	INSULIN GLULISINE 100 iu/mL injection vials
f2...	MEDIUM/LONG-ACTING INSULINS
f21..	BIPHASIC INSULIN
f211.	Rapitard MC 100 iu/mL injection 10 mL
f212.	*PENMIX cartridges 1.5 mL
f21z.	Biphasic insulin 100 units/mL injection vial
f22..	IZS - insulin zinc suspension
f221.	Insulin zinc lente 100 iu/mL injection 10 mL
f222.	HYPURIN LENTE 100 iu/mL injection 10 mL
f223.	LENTARD MC 100 iu/mL injection 10 mL
f224.	*NEULENTE 100 iu/mL injection
f225.	Tempulin 100 iu/mL injection
f226.	Human Monotard 100 iu/mL injection 10 mL
f227.	Humulin Lente 100 iu/mL injection 10 mL
f228.	HYPURIN BOVINE LENTE 100 iu/mL injection 10 mL
f22y.	Human insulin zinc suspension 100 units/mL injection vial
f22z.	Insulin zinc suspension 100 units/mL injection vial
f23..	INSULIN ZINC SUSPENSION - AMORPHOUS
f231.	SEMITARD MC 100 iu/mL injection 10 mL
f23z.	Insulin zinc amorphous suspension 100 units/mL injection vial
f24..	Insulin zinc suspension (crystalline)
f241.	Human Ultratard 100 iu/mL injection 10 mL
f242.	HUMULIN ZN 100 iu/mL injection 10 mL



Continued

Supplementary table 2: Continued

READ_CD	Description
f24z.	Insulin zinc crystalline human suspension 100 units/mL injection vial
f25..	Isophane insulin
f251.	ISOPHANE INSULIN 100iu/mL injection 10 mL
f252.	HYPURIN ISOPHANE 100iu/mL injection 10 mL
f253.	Insulatard 100iu/mL injection 10 mL
f254.	*MONOPHANE 100iu/mL injection
f255.	Neuphane 100iu/mL injection
f256.	*INITARD 50/50 injection 10 mL
f257.	*MIXTARD injection 10 mL
f258.	Human Insulatard 100iu/mL injection 10 mL
f259.	HUMAN PROTAPHANE 100iu/mL injection 10 mL
f25A.	HUMULIN I 100iu/mL prefilled pen 3 mL
f25B.	Insuman Basal Optiset 100iu/mL prefilled pen 3 mL
f25C.	Insulatard InnoLet 100units/mL prefilled syringe 3 mL
f25D.	INSULATARD FLEXPEN 100iu/mL prefilled pen 3 mL
f25E.	HYPURIN BOVINE ISOPHANE 100iu/mL injection cartridge 3 mL
f25F.	Hypurin Porcine Isophane 100iu/mL injection cartridge 3 mL
f25G.	HUMULIN I KWIKPEN 100iu/mL prefilled pen 3 mL
f25H.	INSUMAN BASAL SOLOSTAR 100iu/mL prefilled pen 3 mL
f25W.	Human isophane insulin 100 units/mL prefilled syringe
f25X.	HUMAN ISOPHANE INSULIN 100 units/mL injection cartridge
f25Y.	HUMAN ISOPHANE INSULIN 100 units/mL injection vials
f25Z.	Isophane insulin 100iu/mL injection vial
f25a.	Humulin I 100iu/mL injection 10 mL
f25b.	HUMAN ACTRAPHANE injection 10 mL
f25c.	*HUMAN INITARD injection 10 mL
f25d.	Human Mixtard injection 10 mL
f25e.	*HUMULIN M1 injection 10 mL
f25f.	Humulin M2 injection 10 mL
f25g.	Humulin M3 injection 10 mL
f25h.	*HUMULIN M4 injection 10 mL
f25i.	HUMAN PROTAPHANE penfill 1.5 mL
f25j.	Pur-In Isophane 100iu/mL vials 10 mL
f25k.	PUR-IN ISOPHANE 100iu/mL cartridges 3 mL
f25l.	HUMULIN I 100iu/mL cartridges 1.5 mL
f25m.	Human Insulatard 100iu/mL preloaded injection pen 3 mL
f25n.	HUMAJECT I 100iu/mL prefilled pen
f25o.	HUMULIN I 100iu/mL cartridges 3 mL
f25p.	Human Insulatard ge 100iu/mL injection 10 mL
f25q.	Human Insulatard Penfill 1.5 mL
f25r.	PORK INSULATARD 100 units/mL injection 10 mL
f25s.	ISOPHANE INSULIN 100iu/mL injection cartridge
f25t.	Hypurin Bovine Isophane 100iu/mL injection cartridge 1.5 mL
f25u.	Hypurin Porcine Isophane 100iu/mL injection cartridge 1.5 mL
f25v.	Hypurin Bovine Isophane 100iu/mL injection 10 mL
f25w.	Hypurin Porcine Isophane 100iu/mL injection 10 mL
f25x.	Insulatard Penfill cartridge 3 mL
f25y.	Insuman Basal 100iu/mL injection vial 5 mL
f25z.	INSUMAN BASAL 100iu/mL injection cartridge 3 mL
f26..	PROTAMINE ZINC INSULIN
f261.	HYPURIN PROTAMINE ZINC injection 10 mL
f262.	HYPURIN BOVINE PROTAMINE ZINC 100iu/mL injection 10 mL
f26z.	Protamine zinc insulin 100 units/mL injection vial
f27..	BIPHASIC ISOPHANE INSULIN
f271.	Mixtard 30/70 injection 10 mL
f272.	*PENMIX 30/70 cartridges 1.5 mL
f273.	Pur-In Mix 15/85 vials 10 mL



Continued



## Supplementary table 2: Continued

READ_CD	Description
f274.	Pur-In Mix 15/85 cartridges 3 mL
f275.	Pur-In Mix 25/75 vials 10 mL
f276.	PUR-IN MIX 25/75 cartridges 3 mL
f277.	*PUR-IN MIX 50/50 vials 10 mL
f278.	Pur-In Mix 50/50 cartridges 3 mL
f279.	*HUMULIN M1 10/90 vials 10 mL
f27A.	HUMAJECT M1 100 iu/mL prefilled pen
f27B.	Humaject M2 100 iu/mL prefilled pen
f27C.	HUMAJECT M3 100 iu/mL prefilled pen
f27D.	HUMAJECT M4 100 iu/mL prefilled pen
f27E.	Humaject M5 100 iu/mL prefilled pen
f27F.	HUMULIN M4 40/60 cartridges 3 mL
f27G.	HUMULIN M5 50/50 cartridges 3 mL
f27H.	HUMAN MIXTARD 30 ge injection 10 mL
f27I.	Hypurin Porcine Biphasic Isophane 30/70 injection cartridge 3 mL
f27J.	PenMix 10/90 cartridges 1.5 mL
f27K.	Human Mixtard 20 Penfill 1.5 mL
f27L.	HUMAN MIXTARD 30 PENFILL cartridges 1.5 mL
f27M.	HUMAN MIXTARD 40 PENFILL cartridges 1.5 mL
f27N.	Human Mixtard 50 Penfill 1.5 mL
f27O.	Mixtard 30 InnoLet 100 units/mL prefilled syringe 3 mL
f27P.	PenMix 10/90 (pyr) 100 iu/mL preloaded injection pen
f27Q.	HUMAN MIXTARD 20 prefilled pen
f27R.	HUMAN MIXTARD 30 prefilled pen
f27S.	HUMAN MIXTARD 40 prefilled pen
f27T.	PenMix 50/50 (pyr) 100 iu/mL preloaded injection pen
f27V.	Pork Mixtard 30 injection 10 mL
f27W.	Human Mixtard 50 vial 10 mL
f27X.	Hypurin Porcine Biphasic Isophane 30/70 injection 10 mL
f27Y.	HYPURIN PORCINE BIPHASIC ISOPHANE 30/70 injection cartridge 1.5 mL
f27Z.	Insuman Comb 25 100 iu/mL injection vial 5 mL
f27a.	HUMULIN M1 10/90 cartridges 1.5 mL
f27b.	Humulin M2 20/80 vials 10 mL
f27c.	Humulin M2 20/80 cartridges 1.5 mL
f27d.	Humulin M3 30/70 vials 10 mL
f27e.	Humulin M3 30/70 cartridges 1.5 mL
f27f.	Humulin M4 40/60 vials 10 mL
f27g.	Humulin M4 40/60 cartridges 1.5 mL
f27h.	*INITARD 50/50 injection 10 mL
f27i.	HUMAN ACTRAPHANE 30/70 injection 10 mL
f27j.	Human Mixtard 30/70 injection 10 mL
f27k.	HUMAN INITARD 50/50 injection 10 mL
f27l.	*PENMIX 10/90 cartridges 1.5 mL
f27m.	*PENMIX 20/80 cartridges 1.5 mL
f27n.	*PENMIX 40/60 cartridges 1.5 mL
f27o.	*PENMIX 50/50 cartridges 1.5 mL
f27p.	PENMIX 30/70 preloaded injection pen
f27q.	PENMIX 10/90 preloaded injection pen
f27r.	PENMIX 20/80 preloaded injection pen
f27s.	PENMIX 40/60 preloaded injection pen
f27t.	PENMIX 50/50 preloaded injection pen
f27u.	Humulin M5 50/50 injection vial 10 mL
f27v.	HUMULIN M5 50/50 cartridges 1.5 mL
f27w.	Humulin M1 10/90 cartridges 3 mL
f27x.	Humulin M2 20/80 cartridges 3 mL
f27y.	Insuman Comb 25 100 iu/mL injection cartridge 3 mL
f27z.	HUMULIN M3 30/70 cartridges 3 mL



Continued

## Supplementary table 2: Continued

READ_CD	Description
f28..	Biphasic isophane insulin 2
f281.	Mixtard 10 (human) Penfill cartridge 3 mL
f282.	Mixtard 20 (human) Penfill cartridge 3 mL
f283.	Mixtard 30 (human) Penfill cartridge 3 mL
f284.	Mixtard 40 (human) Penfill cartridge 3 mL
f285.	Mixtard 50 Penfill cartridge 3 mL
f286.	INSUMAN COMB 15 100iu/mL injection cartridge 3 mL
f287.	INSUMAN COMB 50 100iu/mL injection vials 5 mL
f288.	INSUMAN COMB 15 OPTISET 100 iu/mL prefilled pen 3 mL
f289.	INSUMAN COMB 25 OPTISET 100 iu/mL prefilled pen 3 mL
f28A.	Insuman Comb 50 OptiSet 100 iu/mL prefilled pen 3 mL
f28B.	Insuman Comb 15 100 iu/mL injection vial 5 mL
f28C.	Insuman Comb 50 100 iu/mL injection cartridge 3 mL
f28D.	HUMULIN M3 100 iu/mL prefilled pen 3 mL
f28E.	HUMULIN M3 KWIKPEN 100 iu/mL prefilled pen 3 mL
f28F.	INSUMAN COMB 25 SOLOSTAR 100 iu/mL prefilled pen 3 mL
f29..	INSULIN GLARGINE
f291.	Insulin glargine 100 iu/mL injection cartridge
f292.	INSULIN GLARGINE 100 iu/mL injection vials
f293.	Insulin glargine 100 iu/mL prefilled pen
f294.	Lantus 100 iu/mL injection cartridge 3 mL
f295.	Lantus 100 iu/mL injection vial 10 mL
f296.	LANTUS 100 iu/mL OptiSet prefilled pen 3 mL
f297.	Lantus 100 iu/mL OptiClik cartridges 3 mL
f298.	LANTUS 100 iu/mL SoloStar prefilled pen 3 mL
f299.	TOUJEO 300 iu/mL SoloStar prefilled pen 1.5 mL
f29A.	INSULIN GLARGINE 300 iu/mL prefilled pen
f29B.	ABASAGLAR 100 iu/mL solution for injection cartridges 3 mL
f29C.	ABASAGLAR KWIKPEN 100 iu/mL soln for inj prefilled pen 3 mL
f2A..	INSULIN DETEMIR
f2A1.	Levemir Penfill 100 iu/mL injection cartridge 3 mL
f2A2.	Levemir FlexPen 100 iu/mL prefilled pen 3 mL
f2A3.	LEVEMIR INNOLET 100 iu/mL prefilled syringe 3 mL
f2Ax.	INSULIN DETEMIR 100 iu/mL prefilled syringe
f2Ay.	INSULIN DETEMIR 100 iu/mL prefilled pen
f2Az.	INSULIN DETEMIR 100 iu/mL injection cartridges
f2B..	INSULIN DEGLUDEC
f2B1.	TRESIBA FLEXTOUCH 100 iu/mL prefilled pen 3 mL
f2B2.	INSULIN DEGLUDEC 100 iu/mL prefilled pen
f2B3.	TRESIBA FLEXTOUCH 200 iu/mL prefilled pen 3 mL
f2B4.	INSULIN DEGLUDEC 200 iu/mL prefilled pen
f2B5.	TRESIBA PENFILL 100 iu/mL injection cartridges
f2B6.	INSULIN DEGLUDEC 100 iu/mL injection cartridges
f2C..	INSULIN DEGLUDEC + LIRAGLUTIDE
f2C1.	XULTOPHY 100 iu/mL/3.6 mg/mL soln for inj prefilled pen 3 mL
f2C2.	INSULIN DEGLUDEC+LIRAGLUTIDE 100 iu/mL/3.6 mg/mL soln inj pen
fw...	Short with intermediate-acting insulins
fw1..	Biphasic isophane insulin lispro
fw11.	Humalog Mix25 100 iu/mL cartridge 3 mL
fw12.	Humalog Mix25 100 iu/mL prefilled pen 3 mL
fw13.	HUMALOG MIX50 100 iu/mL prefilled pen 3 mL
fw14.	HUMALOG MIX50 100 iu/mL cartridges 3 mL
fw15.	HUMALOG MIX25 KWIKPEN 100 iu/mL prefilled pen 3 mL
fw16.	HUMALOG MIX50 KWIKPEN 100 iu/mL prefilled pen 3 mL
fw2..	BIPHASIC INSULIN ASPART
fw21.	NovoMix 30 Penfill 100 units/mL injection cartridge 3 mL
fw22.	NovoMix 30 FlexPen 100 units/mL injection prefilled pen 3 mL



Continued

Supplementary table 2: Continued

READ_CD	Description
x005R	Actrapid (pyr) 100 iu/mL injection vial
x005T	Human Insulatard (emp) 100 iu/mL injection vial
x005X	Human Insulatard ge 100 units/mL injection vial
x005Y	Human Insulatard 100 units/mL Penfill
x006L	Hypurin Isophane (bovine) 100 iu/mL injection vial
x006M	Hypurin Lente (bovine) 100 iu/mL injection vial
x006N	Hypurin Bovine Neutral 100 iu/mL injection vial
x006O	Hypurin Protamine Zinc (bovine) 100 units/mL injection vial
x006e	Insulatard (porcine) 100 iu/mL injection vial
x006f	Insulin product
x008B	Neutral insulin 100 iu/mL injection vial
x00Bt	Pork Actrapid 100 iu/mL injection vial
x01LZ	Actrapid NovoLet 100 iu/mL prefilled pen
x01La	Hypurin 100 units/mL injection vial
x01Lb	Humulin insulin
x01Lc	PenMix insulin
x01Ld	Initard insulin
x01Le	Pur-In-Mix insulin
x01Lf	Mixtard insulin
x01Lg	Actraphane insulin
x01Lh	Insulatard NovoLet 100 units/mL prefilled pen
x01UL	Glass U100 insulin syringe
x01UM	Disposable U100 insulin syringe
x02KN	Human insulin 100 units/mL prefilled pen
x02KO	Human isophane insulin 100 units/mL prefilled pen
x03ak	Pork Insulatard 100 units/mL injection
x03d0	Pork Insulatard
x03d5	Human Actrapid
x03dA	Human Insulatard
x03el	Humalog 100 iu/mL injection vial
x03eJ	Humalog 100 iu/mL injection cartridge
x03eK	Humalog
x03ln	Hypurin Bovine Neutral 100 iu/mL injection cartridge
x03lo	Hypurin Bovine Isophane 100 iu/mL injection cartridge
x03lp	Hypurin Porcine Neutral 100 iu/mL injection cartridge
x03lq	Hypurin Porcine Isophane 100 iu/mL injection cartridge
x03lv	Hypurin Porcine Neutral 100 iu/mL injection vial
x03lw	Hypurin Porcine Isophane 100 iu/mL injection vial
x03lx	Hypurin biphasic isophane insulin
x03ly	Hypurin Porcine 30/70 Mix injection vial
x03lz	Hypurin Porcine 30/70 Mix injection cartridge
x049L	Human Actrapid Penfill
x049M	Human Insulatard ge
x049q	Hypurin Bovine Isophane
x049r	Hypurin Bovine Lente
x049s	Hypurin Bovine Neutral
x049t	Hypurin Bovine Protamine Zinc
x049u	Hypurin Porcine Biphasic Isophane
x04wm	Humalog biphasic isophane insulin lispro
x04wn	Humalog Mix25 100 iu/mL cartridge
x04wo	Humalog Mix25 100 iu/mL prefilled pen
x04wp	Humalog Mix25
x051f	Hypurin Porcine
x053d	NovoRapid NovoLet 100 units/mL prefilled syringe
x053e	NovoRapid Penfill 100 units/mL cartridge
x053f	NovoRapid
x053g	NovoRapid NovoLet



Continued

Supplementary table 2: Continued

READ_CD	Description
x053h	NovoRapid Penfill
x056T	Insuman Rapid 100 iu/mL injection vial
x056U	Insuman Rapid 100 iu/mL injection cartridge
x056X	Insuman Basal 100 iu/mL injection vial
x056Y	Insuman Basal
x056Z	Insuman Basal 100 iu/mL injection cartridge
x056a	Insuman Comb insulin
x056b	Insuman Comb 25 100 iu/mL injection vial
x056c	Insuman Comb 25 100 iu/mL injection cartridge
x056d	Insuman Rapid
x056e	Insuman Comb 25
x059L	Humalog-Pen 100 iu/mL prefilled pen
x059M	Humalog-Pen
x059N	Humalog Mix50 100 iu/mL prefilled pen
x059P	Humalog Mix50
x05Cm	Insuman Comb 15 100 iu/mL injection cartridge
x05Cn	Insuman Comb 50 100 iu/mL injection vial
x05Co	Insuman Comb 15
x05Cp	Insuman Comb 50
x05EY	Insuman Basal OptiSet 100 iu/mL prefilled pen
x05EZ	Insuman Basal OptiSet
x05Ea	Insuman Rapid OptiSet 100 iu/mL prefilled pen
x05Eb	Insuman Rapid OptiSet
x05Ec	Insuman Comb 15 OptiSet 100 iu/mL prefilled pen
x05Ed	Insuman Comb 25 OptiSet 100 iu/mL prefilled pen
x05Ee	Insuman Comb 50 OptiSet 100 iu/mL prefilled pen
x05Ef	Insuman Comb 15 OptiSet
x05Eg	Insuman Comb 25 OptiSet
x05Eh	Insuman Comb 50 OptiSet
x05FF	Insuman Comb 15 100 iu/mL injection vial
x05FG	Insuman Comb 50 100 iu/mL injection cartridge
x05MR	Biphasic insulin - chemical
x05MS	Biphasic isophane insulin - chemical
x05Xe	Insulatard InnoLet 100 units/mL prefilled syringe
x05Xf	Insulatard InnoLet
x05d0	NovoMix
x05d1	Insulin biphasic aspart 30/70 100 units/mL injection cartridge 3 mL
x05d2	Insulin biphasic aspart 30/70 100 units/mL injection prefilled pen 3 mL
x05fE	Lantus
x05fF	Lantus 100 iu/mL injection cartridge
x05fG	Lantus 100 iu/mL injection vial
x05fH	Lantus 100 iu/mL OptiSet prefilled pen
x05fv	Disposable insulin U100 0.3 mL syringe+needle
x05fw	Disposable insulin U100 0.5 mL syringe+needle
x05fx	Disposable insulin U100 1 mL syringe+needle
x05gU	NovoRapid FlexPen
x05gV	Insulatard FlexPen
x05gW	Insulatard FlexPen 100 iu/mL prefilled pen
x05gX	NovoRapid FlexPen 100 units/mL prefilled pen
x05tf	Levemir Penfill 100 iu/mL injection cartridge
x05tg	Levemir
x05th	Levemir FlexPen 100 iu/mL prefilled pen
x05ya	Apidra 100 iu/mL injection vial
x05yb	Apidra 100 iu/mL injection cartridge
x05yc	Apidra
x05zZ	Lantus 100 iu/mL OptiClik cartridge
x05zr	Apidra 100 iu/mL OptiSet prefilled pen



Continued

## Supplementary table 2: Continued

READ_CD	Description
f3...	SULPHONYLUREAS
f31..	Acetohexamide
f311.	Dimelor 500 mg tablet
f31z.	Acetohexamide 500 mg tablet
f32..	CHLORPROPAMIDE
f321.	Chlorpropamide 100 mg tablet
f322.	Chlorpropamide 250 mg tablet
f323.	Diabinese 100 mg tablet
f324.	*DIABINESE 250 mg tablets
f325.	Glymese 250 mg tablet
f33..	Glybenclamide
f331.	GLIBENCLAMIDE 2.5 mg tablets
f332.	GLIBENCLAMIDE 5 mg tablets
f333.	Daonil 5 mg tablet
f334.	*SEMI-DAONIL 2.5 mg tablets
f335.	*EUGLUCON 2.5 mg tablets
f336.	*EUGLUCON 5 mg tablets
f337.	*LIBANIL 2.5 mg tablets
f338.	Libanil 5 mg tablet
f339.	Malix 2.5 mg tablet
f33a.	*MALIX 5 mg tablets
f33b.	*DAONIL CP 5 mg tablets
f33c.	Semi-daonil CP 2.5 mg tablets
f33d.	*DIABETAMIDE 2.5 mg tablets
f33e.	*DIABETAMIDE 5 mg tablets
f33f.	*CALABREN 2.5 mg tablets
f33g.	Calabren 5 mg tablet
f34..	Glibornuride
f341.	*GLUTRIL 25 mg tablets
f34z.	*GLIBORNURIDE 25 mg tablets
f35..	GLICLAZIDE
f351.	DIAMICRON 80 mg tablets
f352.	DIAGLYK 80 mg tablets
f353.	Vivazide 80 mg tablet
f354.	DIAMICRON MR 30 mg m/r tablets
f355.	NAZDOL MR 30 mg m/r tablets
f356.	EDICIL MR 30 mg m/r tablets
f357.	ZICRON 40 mg tablets
f358.	VITILE XL 30 mg m/r tablets
f359.	LAAGLYDA MR 60 mg m/r tablets
f35A.	VAMJU 30 mg m/r tablets
f35B.	VAMJU 60 mg m/r tablets
f35C.	BILXONA 30 mg m/r tablets
f35D.	BILXONA 60 mg m/r tablets
f35w.	GLICLAZIDE 60 mg m/r tablets
f35x.	GLICLAZIDE 40 mg tablets
f35y.	GLICLAZIDE 30 mg m/r tablets
f35z.	GLICLAZIDE 80 mg tablets
f36..	Glipizide product
f361.	GLIPIZIDE 5 mg tablets
f362.	*GLIBENESE 5 mg tablets
f363.	*MINODIAB 2.5 mg tablets
f364.	Minodiab 5 mg tablet
f36y.	*GLIPIZIDE 5 mg tablets
f36z.	Glipizide 2.5 mg tablet
f37..	Gliquidone
f371.	*GLURENORM 30 mg tablets



Continued

## Supplementary table 2: Continued

READ_CD	Description
f37z.	*GLIQUIDONE 30 mg tablets
f38..	Glymidine
f381.	Gondafon 500 mg tablet
f38z.	*GLYMIDINE 500 mg tablets
f39..	TOLAZAMIDE
f391.	TOLANASE 100 mg tablets
f392.	TOLANASE 250 mg tablets
f39y.	Tolazamide 100 mg tablet
f39z.	Tolazamide 250 mg tablet
f3A..	GLIMEPIRIDE
f3A1.	Glimepiride 2 mg tablet
f3A2.	AMARYL 2 mg tablets
f3A3.	GLIMEPIRIDE 1 mg tablets
f3A4.	Glimepiride 3 mg tablet
f3A5.	Glimepiride 4 mg tablet
f3A6.	Amaryl 1 mg tablet
f3A7.	Amaryl 3 mg tablet
f3A8.	AMARYL 4 mg tablets
f3A9.	NIDDARYL 1 mg tablets
f3AA.	NIDDARYL 2 mg tablets
f3AB.	NIDDARYL 3 mg tablets
f3AC.	NIDDARYL 4 mg tablets
f3a..	TOLBUTAMIDE
f3a1.	TOLBUTAMIDE 500 mg tablets
f3a2.	GLYCONON 500 mg tablets
f3a3.	*PRAMIDEX 500 mg tablets
f3a4.	Rastinon 500 mg tablet
f4...	Biguanide
f41..	Metformin hydrochloride
f411.	Glucophage 500 mg tablet
f412.	Glucophage 850 mg tablet
f413.	*ORABET 500 mg tablets
f414.	*ORABET 850 mg tablets
f415.	Glucamet 500 tablet
f416.	Glucamet 850 tablet
f417.	Glucophage SR 500 mg m/r tablet
f418.	METSOL 500 mg/5 mL oral solution
f419.	GLUCOPHAGE SR 750 mg m/r tablets
f41A.	GLUCOPHAGE SR 1000 mg m/r tablets
f41B.	BOLAMYN SR 500 mg m/r tablets
f41C.	GLUCOPHAGE 500 mg/sachet oral powder
f41D.	GLUCOPHAGE 1000 mg/sachet oral powder
f41E.	METABET SR 500 mg m/r tablets
f41F.	METABET SR 1000 mg m/r tablets
f41G.	GLUCIENT SR 500 mg m/r tablets
f41H.	DIAGEMET XL 500 mg m/r tablets
f41I.	SUKKARTO SR 500 mg m/r tablets
f41J.	SUKKARTO SR 1000 mg m/r tablets
f41s.	METFORMIN HYDROCHLORIDE 1000 mg/sachet oral powder
f41t.	METFORMIN HYDROCHLORIDE 500 mg/sachet oral powder
f41u.	METFORMIN HYDROCHLORIDE 1000 mg m/r tablets
f41v.	METFORMIN HYDROCHLORIDE 750 mg m/r tablets
f41w.	METFORMIN HYDROCHLORIDE 500 mg/5 mL oral solution
f41x.	Metformin hydrochloride 500 mg m/r tablet
f41y.	METFORMIN HYDROCHLORIDE 500 mg tablets
f41z.	METFORMIN HYDROCHLORIDE 850 mg tablets
ft...	Other drugs used in diabetes



Continued

## Supplementary table 2: Continued

READ_CD	Description
ft1..	ACARBOSE
ft11.	Acarbose 50 mg tablet
ft12.	ACARBOSE 100 mg tablets
ft13.	Glucobay 50 mg tablet
ft14.	GLUCOBAY 100 tablets
ft2..	Troglitazone
ft21.	Troglitazone 200 mg tablet
ft22.	*TROGLITAZONE 300 mg tablets
ft23.	Troglitazone 400 mg tablet
ft24.	*ROMOZIN 200 mg tablets
ft25.	*ROMOZIN 300 mg tablets
ft26.	Romozin 400 mg tablet
ft3..	REPAGLINIDE
ft31.	Repaglinide 0.5 mg tablet
ft32.	Repaglinide 1 mg tablet
ft33.	Repaglinide 2 mg tablet
ft34.	*NOVONORM 0.5 mg tablets
ft35.	*NOVONORM 1 mg tablets
ft36.	NovoNorm 2 mg tablet
ft37.	PRANDIN 500micrograms tablets
ft38.	PRANDIN 1 mg tablets
ft39.	PRANDIN 2 mg tablets
ft4..	Rosiglitazone
ft41.	*AVANDIA 4 mg tablets
ft42.	*AVANDIA 8 mg tablets
ft43.	Avandamet 1 mg / 500 mg tablet
ft44.	Avandamet 2 mg / 500 mg tablet
ft45.	AVANDAMET 2 mg / 1000 mg tablets
ft46.	Avandamet 4 mg / 1000 mg tablet
ft4u.	Rosiglitazone 2 mg / Metformin 1000 mg tablet
ft4v.	ROSIGLITAZONE 4 mg / METFORMIN 1000 mg tablets
ft4w.	Rosiglitazone 2 mg / metformin 500 mg tablet
ft4x.	ROSIGLITAZONE 1 mg / METFORMIN 500 mg tablets
ft4y.	Rosiglitazone 8 mg tablet
ft4z.	*ROSIGLITAZONE 4 mg tablets
ft5..	PIOGLITAZONE
ft51.	ACTOS 15 mg tablets
ft52.	Actos 30 mg tablet
ft53.	ACTOS 45 mg tablets
ft54.	GLIDIPION 15 mg tablets
ft55.	GLIDIPION 30 mg tablets
ft56.	GLIDIPION 45 mg tablets
ft5x.	PIOGLITAZONE 45 mg tablets
ft5y.	PIOGLITAZONE 30 mg tablets
ft5z.	PIOGLITAZONE 15 mg tablets
ft6..	Nateglinide
ft61.	STARLIX 60 mg tablets
ft62.	Starlix 120 mg tablet
ft63.	STARLIX 180 mg tablets
ft6x.	NATEGLINIDE 180 mg tablets
ft6y.	NATEGLINIDE 120 mg tablets
ft6z.	Nateglinide 60 mg tablet
ft7..	METFORMIN + PIOGLITAZONE
ft71.	COMPETACT 15 mg/850 mg tablets
ft7z.	METFORMIN 850 mg/PIOGLITAZONE 15 mg tablets
ft8..	SITAGLIPTIN
ft81.	JANUVIA 100 mg tablets



Continued

## Supplementary table 2: Continued

READ_CD	Description
ft82.	JANUVIA 50 mg tablets
ft83.	JANUVIA 25 mg tablets
ft8x.	SITAGLIPTIN 25 mg tablets
ft8y.	SITAGLIPTIN 50 mg tablets
ft8z.	SITAGLIPTIN 100 mg tablets
ft9..	EXENATIDE
ft91.	BYETTA 5micrograms/0.02 mL injection prefilled pen
ft92.	BYETTA 10micrograms/0.04 mL injection prefilled pen
ft93.	BYDUREON 2 mg powder and solvent for suspension for injection
ft94.	BYDUREON 2 mg powder+solvent for susp for inj prefilled pen
ft95.	EXENATIDE 2 mg powder+solvent for susp for inj prefilled pen
ft9x.	EXENATIDE 2 mg powder+solvent for suspension for injection
ft9y.	EXENATIDE 10micrograms/0.04 mL injection prefilled pen
ft9z.	EXENATIDE 5micrograms/0.02 mL injection prefilled pen
fta..	VILDAGLIPTIN
fta1.	GALVUS 50 mg tablets
ftaZ.	VILDAGLIPTIN 50 mg tablets
ftb..	METFORMIN + VILDAGLIPTIN
ftb1.	EUCREAS 50 mg/850 mg tablets
ftb2.	EUCREAS 50 mg/1000 mg tablets
ftby.	VILDAGLIPTIN/METFORMIN 50 mg/1000 mg tablets
ftbz.	VILDAGLIPTIN/METFORMIN 50 mg/850 mg tablets
ftc..	LIRAGLUTIDE
ftc1.	VICTOZA 6 mg/mL solution for injection prefilled pen 3 mL
ftc2.	LIRAGLUTIDE 6 mg/mL solution for injection prefilled pen
ftd..	SAXAGLIPTIN
ftd1.	ONGLYZA 5 mg tablets
ftd2.	ONGLYZA 2.5 mg tablets
ftdy.	SAXAGLIPTIN 2.5 mg tablets
ftdz.	SAXAGLIPTIN 5 mg tablets
fte..	METFORMIN + SITAGLIPTIN
fte1.	JANUMET 50 mg/1000 mg tablets
ftez.	SITAGLIPTIN/METFORMIN HYDROCHLORIDE 50 mg/1000 mg tablets
ftf..	LINAGLIPTIN
ftf1.	TRAJENTA 5 mg tablets
ftf2.	LINAGLIPTIN 5 mg tablets
ftg..	METFORMIN + LINAGLIPTIN
ftg1.	JENTADUETO 2.5 mg/850 mg tablets
ftg2.	LINAGLIPTIN/METFORMIN HYDROCHLORIDE 2.5 mg/850 mg tablets
ftg3.	JENTADUETO 2.5 mg/1000 mg tablets
ftg4.	LINAGLIPTIN/METFORMIN HYDROCHLORIDE 2.5 mg/1000 mg tablets
ftth..	DAPAGLIFLOZIN
ftth1.	FORXIGA 5 mg tablets
ftth2.	FORXIGA 10 mg tablets
ftth3.	DAPAGLIFLOZIN 5 mg tablets
ftth4.	DAPAGLIFLOZIN 10 mg tablets
fti..	METFORMIN + SAXAGLIPTIN
fti1.	KOMBOGLYZE 2.5 mg/850 mg tablets
fti2.	SAXAGLIPTIN/METFORMIN HYDROCHLORIDE 2.5 mg/850 mg tablets
fti3.	KOMBOGLYZE 2.5 mg/1000 mg tablets
fti4.	SAXAGLIPTIN/METFORMIN HYDROCHLORIDE 2.5 mg/1000 mg tablets
ftj..	LIXISENATIDE
ftj1.	LYXUMIA 10micrograms/0.2 mL soln for inj prefilled pen 3 mL
ftj2.	LIXISENATIDE 10micrograms/0.2 mL soln for injection pen 3 mL
ftj3.	LYXUMIA 20micrograms/0.2 mL soln for inj prefilled pen 3 mL
ftj4.	LIXISENATIDE 20micrograms/0.2 mL soln for injection pen 3 mL
ftj5.	LYXUMIA 10 mcg/0.2mL+20mcg/0.2 mL soln inj prefilled pens 3 mL



Continued



## Supplementary table 2: Continued

READ_CD	Description
ftj6.	LIXISENATIDE 10 mcg/0.2mL+20mcg/0.2 mL soln for inj pens 3 mL
ftk..	ALOGLIPTIN
ftk1.	VIPIDIA 6.25 mg tablets
ftk2.	ALOGLIPTIN 6.25 mg tablets
ftk3.	VIPIDIA 12.5 mg tablets
ftk4.	ALOGLIPTIN 12.5 mg tablets
ftk5.	VIPIDIA 25 mg tablets
ftk6.	ALOGLIPTIN 25 mg tablets
ftl..	METFORMIN + ALOGLIPTIN
ftl1.	VIPDOMET 12.5 mg/1000 mg tablets
ftl2.	ALOGLIPTIN+METFORMIN HYDROCHLORIDE 12.5 mg/1000 mg tablets
ftm..	METFORMIN + DAPAGLIFLOZIN
ftm1.	XIGDUO 5 mg/850 mg tablets
ftm2.	DAPAGLIFLOZIN+METFORMIN HYDROCHLORIDE 5 mg/850 mg tablets
ftm3.	XIGDUO 5 mg/1000 mg tablets
ftm4.	DAPAGLIFLOZIN+METFORMIN HYDROCHLORIDE 5 mg/1000 mg tablets
ftn..	CANAGLIFLOZIN
ftn1.	INVOKANA 100 mg tablets
ftn2.	CANAGLIFLOZIN 100 mg tablets
ftn3.	INVOKANA 300 mg tablets
ftn4.	CANAGLIFLOZIN 300 mg tablets
fto..	EMPAGLIFLOZIN
fto1.	JARDIANCE 10 mg tablets
fto2.	EMPAGLIFLOZIN 10 mg tablets
fto3.	JARDIANCE 25 mg tablets
fto4.	EMPAGLIFLOZIN 25 mg tablets
ftp..	METFORMIN + CANAGLIFLOZIN
ftp1.	VOKANAMET 50 mg/850 mg tablets
ftp2.	CANAGLIFLOZIN+METFORMIN HYDROCHLORIDE 50 mg/850 mg tablets
ftp3.	VOKANAMET 50 mg/1000 mg tablets
ftp4.	CANAGLIFLOZIN+METFORMIN HYDROCHLORIDE 50 mg/1000 mg tablets
ftq..	DULAGLUTIDE
ftq1.	TRULICITY 750 micrograms/0.5 mL soln for injection p/f pen
ftq2.	DULAGLUTIDE 750 micrograms/0.5 mL soln for injection p/f pen
ftq3.	TRULICITY 1.5 mg/0.5 mL solution for injection prefilled pen
ftq4.	DULAGLUTIDE 1.5 mg/0.5 mL soln for injection prefilled pen
ftq5.	TRULICITY 750 micrograms/0.5 mL soln for inj prefilled syringe
ftq6.	DULAGLUTIDE 750 micrograms/0.5 mL solution for injection pfs
ftq7.	TRULICITY 1.5 mg/0.5 mL soln for injection prefilled syringe
ftq8.	DULAGLUTIDE 1.5 mg/0.5 mL soln for injection prefilled syringe
ftr..	METFORMIN + EMPAGLIFLOZIN
ftr1.	SYNJARDY 5 mg/850 mg tablets
ftr2.	EMPAGLIFLOZIN+METFORMIN HYDROCHLORIDE 5 mg/850 mg tablets
ftr3.	SYNJARDY 5 mg/1000 mg tablets
ftr4.	EMPAGLIFLOZIN+METFORMIN HYDROCHLORIDE 5 mg/1000 mg tablets
ftr5.	SYNJARDY 12.5 mg/850 mg tablets
ftr6.	EMPAGLIFLOZIN+METFORMIN HYDROCHLORIDE 12.5 mg/850 mg tablets
ftr7.	SYNJARDY 12.5 mg/1000 mg tablets
ftr8.	EMPAGLIFLOZIN+METFORMIN HYDROCHLORIDE 12.5 mg/1000 mg tablets
fts..	ALBIGLUTIDE
fts1.	EPERZAN 30 mg powder+solvent for solution for injection
fts2.	ALBIGLUTIDE 30 mg powder+solvent for solution for injection
puh..	BLOOD GLUCOSE TESTING STRIPS..
puh1.	*BM TEST-1-44 strip x50. BM TEST-1-44 blood glucose testing strip x50.
puh2.	*DEXTOSTIX strip x50. DEXTOSTIX blood glucose testing strip x50.
puh3.	*GLUCOSTIX strip x50. GLUCOSTIX blood glucose testing strip x50.
puh4.	*HYPOGUARD GA strip x50. HYPOGUARD GA blood glucose testing strip x50.



Continued

Supplementary table 2: Continued

READ_CD	Description
puh5.	*EXACTECH strip x50. EXACTECH blood glucose testing strip x50.
puh6.	*HYPOGUARD SUPREME strip x50. HYPOGUARD SUPREME blood glucose testing strip x50.
puh7.	*BM ACCUTEST strip x50. BM ACCUTEST blood glucose testing strip x50.
puh8.	*GLUCOSTIX strip x25. GLUCOSTIX blood glucose testing strip x25.
puh9.	*ONE TOUCH glucose test strip. ONE TOUCH blood glucose testing strip.
puhA.	*BM-TEST-GP strip x100. BM-TEST-GP blood glucose testing strip x100.
puhB.	*BM-HOPITEST strip x50. BM-HOPITEST blood glucose testing strip x50.
puhC.	*MEDI-TEST GLYCAEMIE P strip. MEDI-TEST GLYCAEMIE P blood glucose testing strip.
puhD.	*MEDI-TEST GLYCAEMIE F strip. MEDI-TEST GLYCAEMIE F blood glucose testing strip.
puhE.	*MEDI-TEST GLYCAEMIE C strip. MEDI-TEST GLYCAEMIE C blood glucose testing strip.
puhF.	*MEDISENSE G2 test strip. MEDISENSE G2 blood glucose testing strip.
puhG.	*GLUCOTIDE test strip. GLUCOTIDE blood glucose testing strip.
puhH.	*GLUCOMETER ESPRIT test disc. GLUCOMETER ESPRIT blood glucose test sensor disc.
puhI.	*GLUCOTREND test strips. GLUCOTREND blood glucose testing strips.
puhJ.	*POCKETSCAN test strip. POCKETSCAN blood glucose testing strip.
puhK.	*MEDISENSE OPTIUM electrode. MEDISENSE OPTIUM blood glucose testing electrode.
puhL.	*HYPOGUARD SUPREME SPCT strp x50. HYPOGUARD SUPREME SPECTRUM blood glucose testing strip x50.
puhM.	MEDISENSE OPTIUM PLS electrode. MEDISENSE OPTIUM PLUS blood glucose testing electrode.
puhN.	*ON-CALL PLUS strip. ON-CALL PLUS blood glucose testing strip.
puhO.	BREEZE 2 test disc. BREEZE 2 blood glucose test sensor disc.
puhP.	BETACHEK G5 test strip. BETACHEK G5 blood glucose testing strip.
puhQ.	FREESTYLE LITE testing strip. FREESTYLE LITE blood glucose testing strip.
puhR.	*BIONIME RIGHTEST GS300 strip. BIONIME RIGHTEST GS300 blood glucose testing strip.
puhS.	*MICRODOT test strip. MICRODOT blood glucose testing strip.
puhS.	MICRODOT test strip. MICRODOT blood glucose testing strip.
puhT.	GLUCOMEN LX SENSOR strip. GLUCOMEN LX SENSOR blood glucose testing strip.
puhU.	ONE TOUCH VITA test strip. ONE TOUCH VITA blood glucose testing strip.
puhV.	WAVESENSE JAZZ test strip. WAVESENSE JAZZ blood glucose testing strip.
puhW.	BETACHEK VISUAL test strip. BETACHEK VISUAL blood glucose testing strip.
puhX.	COSYLAB S7 glucose test strip. COSYLAB S7 blood glucose testing strip.
puhY.	CARESENS N testing strip. CARESENS N blood glucose testing strip.
puhZ.	PURA blood glucose test strip. PURA blood glucose testing strip.
puha.	FINETOUGH blood gluc test tip. FINETOUGH blood glucose testing tip.
puhb.	GLUCOMEN GM test strip. GLUCOMEN GM blood glucose testing strip.
puhc.	CLEVER CHEK test strip. CLEVER CHEK blood glucose testing strip.
puhc.	*CLEVER CHEK test strip. CLEVER CHEK blood glucose testing strip.
puhd.	TRUETEST test strip. TRUETEST blood glucose testing strip.
puhe.	ACCU-CHEK MOBILE test cassette. ACCU-CHEK MOBILE blood glucose testing cassette.
puhf.	*BIOCARE GLUCOSE VT strip. BIOCARE GLUCOSE VT blood glucose testing strip.
puhg.	*SMARTSTRIP blood glucose test. SMARTSTRIP blood glucose testing strip.
puhh.	GLUCOMEN SENSOR test strip. GLUCOMEN SENSOR blood glucose testing strip.
puhi.	*GLUCOTREND PLUS test strips. GLUCOTREND PLUS blood glucose testing strips.
puhj.	ADVANTAGE II testing strip. ADVANTAGE II blood glucose testing strip.
puhk.	*PRESTIGE SMART SYSTEM strip. PRESTIGE SMART SYSTEM blood glucose testing strip.
puhl.	ACTIVE glucose testing strip. ACTIVE blood glucose testing strip.
puhm.	MEDISENSE SOFT-SENSE strip. MEDISENSE SOFT-SENSE blood glucose testing strip.
puhn.	GLUCOFLEX-R strip. GLUCOFLEX-R blood glucose testing strip.
puhp.	ONE TOUCH ULTRA strip. ONE TOUCH ULTRA blood glucose testing strip.
puhq.	FREESTYLE testing strip. FREESTYLE blood glucose testing strip.
puhr.	COMPACT test strip. COMPACT blood glucose testing strip.
puhs.	ASCENSIA AUTODISC test disc. ASCENSIA AUTODISC blood glucose test sensor disc.
puhs.	*ASCENSIA AUTODISC test disc. ASCENSIA AUTODISC blood glucose test sensor disc.
puht.	ASCENSIA MICROFILL test strip. ASCENSIA MICROFILL blood glucose testing strip.
puhu.	TRUETRACK SMART SYSTEM strip. TRUETRACK SMART SYSTEM blood glucose testing strip.
puhv.	*SENOVA blood gluc test strip. SENOVA blood glucose testing strip.
puhw.	SENSOCARD test strip. SENSOCARD blood glucose testing strip.
puhx.	AVIVA blood glucose test strip. AVIVA blood glucose testing strip.

Continued

Supplementary table 2: Continued

READ_CD	Description
puhy.	GLUCOMEN VISIO SENSOR strip. GLUCOMEN VISIO SENSOR blood glucose testing strip.
puhz.	*ON-CALL NOW blood glucose strp. ON-CALL NOW blood glucose testing strip.
pui..	BLOOD GLUCOSE METERS..
pui1.	*ACCUTREND blood glucose meter..
pui2.	*ACCUTREND ALPHA meter. ACCUTREND ALPHA blood glucose meter.
pui3.	*ACCUTREND MINI meter. ACCUTREND MINI blood glucose meter.
pui4.	*EXACTECH blood glucose meter..
pui5.	EXACTECH PEN meter. EXACTECH PEN blood glucose meter.
pui6.	MEDISENSE COMPANION 2 meter. MEDISENSE COMPANION 2 blood glucose meter.
pui7.	MEDISENSE PEN 2 meter. MEDISENSE PEN 2 blood glucose meter.
pui8.	*GLUCOMETER 4 meter. GLUCOMETER 4 blood glucose meter.
pui9.	GLUCOMETER GX meter. GLUCOMETER GX blood glucose meter.
puiA.	GLYCOTRONIC C meter. GLYCOTRONIC C blood glucose meter.
puiB.	*HYPOCOUNT GA meter. HYPOCOUNT GA blood glucose meter.
puiC.	HYPOCOUNT SUPREME meter. HYPOCOUNT SUPREME blood glucose meter.
puiD.	*ONE TOUCH blood glucose meter..
puiE.	*ONE TOUCH II meter. ONE TOUCH II blood glucose meter.
puiF.	*REFLOLUX S meter. REFLOLUX S blood glucose meter.
puiG.	*ONE TOUCH PROFILE meter. ONE TOUCH PROFILE blood glucose meter.
puiH.	*GLUCOTREND blood glucose metr. GLUCOTREND blood glucose meter.
puiI.	*ESPRIT GLUCOMETER. ESPRIT GLUCOMETER blood glucose meter.
puiJ.	SAKURA-GL II meter. SAKURA-GL II blood glucose meter.
puiK.	GLUCOTREND PREMIUM meter. GLUCOTREND PREMIUM blood glucose meter.
puiL.	*SUPREME PETIT meter. SUPREME PETIT blood glucose meter.
puiM.	*POCKETSCAN blood glucose mtr. POCKETSCAN blood glucose meter.
puiN.	MEDISENSE OPTIUM meter. MEDISENSE OPTIUM blood glucose meter.
puiO.	*SUPREME EXTRA meter. SUPREME EXTRA blood glucose meter.
puiP.	*SUPREME PLUS meter. SUPREME PLUS blood glucose meter.
puiQ.	GLUCOMETER ESPRIT 2 meter. GLUCOMETER ESPRIT 2 blood glucose meter.
puiR.	*ACCU-CHEK ACTIVE meter. ACCU-CHEK ACTIVE blood glucose meter.
puiS.	*ACCU-CHEK ADVANTAGE meter. ACCU-CHEK ADVANTAGE blood glucose meter.
puiT.	SOFT-SENSE blood glucose meter..
puiU.	*PRESTIGE SMART SYSTEM LX meter. PRESTIGE SMART SYSTEM LX blood glucose meter.
puiV.	*PRESTIGE SMART SYSTEM QX mter. PRESTIGE SMART SYSTEM QX blood glucose meter.
puiW.	*ONE TOUCH ULTRA meter. ONE TOUCH ULTRA blood glucose meter.
puiX.	*ACCU-CHEK COMPACT meter. ACCU-CHEK COMPACT blood glucose meter.
puiY.	FREESTYLE blood glucose meter..
puiZ.	ASCENSIA BREEZE glucose meter. ASCENSIA BREEZE blood glucose meter.
puia.	ONE TOUCH ULTRASMART meter. ONE TOUCH ULTRASMART blood glucose meter.
puib.	ASCENSIA CONTOUR meter. ASCENSIA CONTOUR blood glucose meter.
puic.	FREESTYLE MINI glucose meter. FREESTYLE MINI blood glucose meter.
puid.	TRUETRACK SMART SYSTEM meter. TRUETRACK SMART SYSTEM blood glucose meter.
puie.	*SENOVA blood glucose meter..
puif.	OPTIUM XCEED glucose meter. OPTIUM XCEED blood glucose meter.
puig.	ACCU-CHEK COMPACT PLUS meter. ACCU-CHEK COMPACT PLUS blood glucose meter.
puih.	SENSOCARD PLUS meter. SENSOCARD PLUS blood glucose meter.
puii.	ON-CALL NOW blood glucose meter. ON-CALL NOW blood glucose meter.
puij.	GLUCOMEN VISIO meter. GLUCOMEN VISIO blood glucose meter.
puik.	BETACHEK G5 meter. BETACHEK G5 blood glucose meter.
puiL.	BREEZE 2 blood glucose meter..
puim.	FREESTYLE LITE meter. FREESTYLE LITE blood glucose meter.
puin.	FREESTYLE FREEDOM LITE meter. FREESTYLE FREEDOM LITE blood glucose meter.
puio.	*BIONIME RIGHTEST GM300 meter. BIONIME RIGHTEST GM300 blood glucose meter.
puip.	*MICRODOT blood glucose meter..
puip.	MICRODOT blood glucose meter..
puiq.	GLUCOMEN LX blood glucose meter. GLUCOMEN LX blood glucose meter.
puir.	ONE TOUCH VITA glucose meter. ONE TOUCH VITA blood glucose meter.

Continued

Supplementary table 2: Continued

READ_CD	Description
puis.	WAVESENSE JAZZ glucose meter. WAVESENSE JAZZ blood glucose meter.
puit.	ACCU-CHEK AVIVA NANO meter. ACCU-CHEK AVIVA NANO blood glucose meter.
puiiu.	COSYLAB S7 blood glucose meter..
puiiv.	CARESENS N blood glucose meter..
puiw.	PURA blood glucose meter..
puix.	ACCU-CHEK MOBILE meter. ACCU-CHEK MOBILE blood glucose meter.
puiy.	TRUERESULT blood glucose meter..
puiz.	TRUE2GO blood glucose meter..
puk..	BLOOD GLUCOSE TESTING KIT..
puk1.	*GLUCOTREND SOFT TEST SYSTEM..
puk2.	*GLUCOTREND-2 SOFT TEST SYSTEM..
puk3.	AVIVA blood glucose test kit..
pun..	BLOOD KETONE TESTING STRIPS..
pun1.	*OPTIUM blood ketone test strp. MEDISENSE OPTIUM blood ketone test strip.
pun2.	OPTIUM blood ketone strips. OPTIUM blood ketone test strips.
pun3.	GLUCOMEN LX blood ketone strip. GLUCOMEN LX blood ketone test strips.
puq..	BLOOD GLUCOSE METERS (2)..
puq1.	CLEVER CHEK meter. CLEVER CHEK blood glucose meter.
puq2.	CLEVER CHEK VOICE meter. CLEVER CHEK VOICE blood glucose meter.
puq3.	FINETOUCH blood glucose meter..
puq4.	GLUCOMEN GM meter. GLUCOMEN GM blood glucose meter.
puq5.	GLUCORX blood glucose meter..
puq6.	IME-DC blood glucose meter..
puq7.	OMNITEST 3 blood glucose meter..
puq8.	ONETOUCH VERIOPRO meter. ONETOUCH VERIOPRO blood glucose meter.
puq9.	ON-CALL ADVANCED meter. ON-CALL ADVANCED blood glucose meter.
puqA.	GLUCORX NEXUS meter. GLUCORX NEXUS blood glucose meter.
puqB.	ONETOUCH ULTRA 2 meter. ONETOUCH ULTRA 2 blood glucose meter.
puqC.	ONETOUCH ULTRAEASY meter. ONETOUCH ULTRAEASY blood glucose meter.
puqD.	GLUCOMEN LX PLUS meter. GLUCOMEN LX PLUS blood glucose and ketone meter.
puqE.	SUPERCHECK 2 meter. SUPERCHECK 2 blood glucose meter.
puqF.	GLUCOLAB blood glucose meter..
puqG.	ELEMENT blood glucose meter..
puqH.	BGSTAR blood glucose meter..
puqI.	CONTOUR XT blood glucose meter..
puqJ.	MENDOR DISCREET meter. MENDOR DISCREET blood glucose meter.
puqK.	TRUERESULT TWIST meter. TRUERESULT TWIST blood glucose meter.
puqL.	SD CODEFREE meter. SD CODEFREE blood glucose meter.
puqM.	TRUEYOU MINI meter. TRUEYOU MINI blood glucose meter.
puqN.	MYLIFE UNIO meter. MYLIFE UNIO blood glucose meter.
puqO.	ICARE ADVANCED meter. ICARE ADVANCED blood glucose meter.
puqP.	AUTOSENSE blood glucose meter..
puqQ.	AUTOSENSE VOICE meter. AUTOSENSE VOICE blood glucose meter.
puqR.	SURESIGN RESURE meter. SURESIGN RESURE blood glucose meter.
puqS.	TEE2 blood glucose meter..
puqT.	CONTOUR TS blood glucose meter..
puqU.	DARIO blood glucose meter..
puqV.	GLUNEO blood glucose meter..
puqW.	GLUCOMEN AREO meter. GLUCOMEN AREO blood glucose meter.
puqX.	SUPERCHECK PLUS meter. SUPERCHECK PLUS blood glucose meter.
puqY.	ONETOUCH SELECT PLUS meter. ONETOUCH SELECT PLUS blood glucose meter.
puqZ.	ADVOCATE REDI-CODE+ meter. ADVOCATE REDI-CODE+ blood glucose meter.
puqa.	ACCU-CHEK PERFORMA meter. ACCU-CHEK PERFORMA blood glucose meter.
puqb.	IHEALTH ALIGN meter. IHEALTH ALIGN blood glucose meter.
puqc.	IHEALTH GLUCO meter. IHEALTH GLUCO blood glucose meter.
puqd.	GLUCOZEN AUTO meter. GLUCOZEN AUTO blood glucose meter.
puqe.	BETACHEK C50 meter. BETACHEK C50 blood glucose meter.

Continued

Supplementary table 2: Continued

READ_CD	Description
pur..	BLOOD GLUCOSE TEST STRIPS (2). BLOOD GLUCOSE TESTING STRIPS (2).
pur1.	GLUCORX test strip. GLUCORX blood glucose testing strip.
pur2.	IME-DC test strip. IME-DC blood glucose testing strip.
pur3.	OMNITEST 3 glucose test strip. OMNITEST 3 blood glucose testing strip.
pur4.	ONETOUCH VERIO test strip. ONETOUCH VERIO blood glucose testing strip.
pur5.	ON-CALL ADVANCED test strip. ON-CALL ADVANCED blood glucose testing strip.
pur6.	GLUCORX NEXUS test strip. GLUCORX NEXUS blood glucose testing strip.
pur7.	SUPERCHECK 2 test strip. SUPERCHECK 2 blood glucose testing strip.
pur8.	GLUCOLAB test strip. GLUCOLAB blood glucose testing strip.
pur9.	ELEMENT test strip. ELEMENT blood glucose testing strip.
purA.	BGSTAR test strip. BGSTAR blood glucose testing strip.
purB.	CONTOUR NEXT test strip. CONTOUR NEXT blood glucose testing strip.
purC.	MENDOR DSCREET test strip cart. MENDOR DISCREET blood glucose testing strip cartridge.
purD.	GLUCODOCK test strip. GLUCODOCK blood glucose testing strip.
purE.	MEDITOUCH test strip. MEDITOUCH blood glucose testing strip.
purF.	TRUEONE test strip+meter. TRUEONE blood glucose testing strip with built-in meter.
purG.	TRUERESULT test strip. TRUERESULT blood glucose testing strip.
purH.	SD CODEFREE test strip. SD CODEFREE blood glucose testing strip.
purI.	TRUEYOU testing strip. TRUEYOU blood glucose testing strip.
purJ.	WAVESENSE JAZZ duo pack strip. WAVESENSE JAZZ duo pack blood glucose testing strip.
purK.	MYLIFE UNIO testing strip. MYLIFE UNIO blood glucose testing strip.
purL.	ICARE ADVANCED SOLO test strip. ICARE ADVANCED SOLO blood glucose testing strip.
purM.	AUTOSENSE testing strip. AUTOSENSE blood glucose testing strip.
purN.	SURESIGN RESURE testing strip. SURESIGN RESURE blood glucose testing strip.
purO.	TEE2 blood glucose test strip. TEE2 blood glucose testing strip.
purP.	CONTOUR TS testing strip. CONTOUR TS blood glucose testing strip.
purQ.	DARIO blood glucose test strip. DARIO blood glucose testing strip.
purR.	GLUNEO test strip. GLUNEO blood glucose testing strip.
purS.	GLUCOMEN AREO SENSOR strip. GLUCOMEN AREO SENSOR blood glucose testing strip.
purT.	SUPERCHECK PLUS test strip. SUPERCHECK PLUS blood glucose testing strip.
purU.	ONETOUCH SELECT PLUS strip. ONETOUCH SELECT PLUS blood glucose testing strip.
purV.	ADVOCATE REDI-CODE+ test strip. ADVOCATE REDI-CODE+ blood glucose testing strip.
purW.	ACCU-CHEK PERFORMA test strip. ACCU-CHEK PERFORMA blood glucose testing strip.
purX.	IHEALTH test strip. IHEALTH blood glucose testing strip.
purY.	GLUCOZEN AUTO test strip. GLUCOZEN AUTO blood glucose testing strip.
purZ.	BETACHEK C50 test cassette. BETACHEK C50 blood glucose testing cassette.

