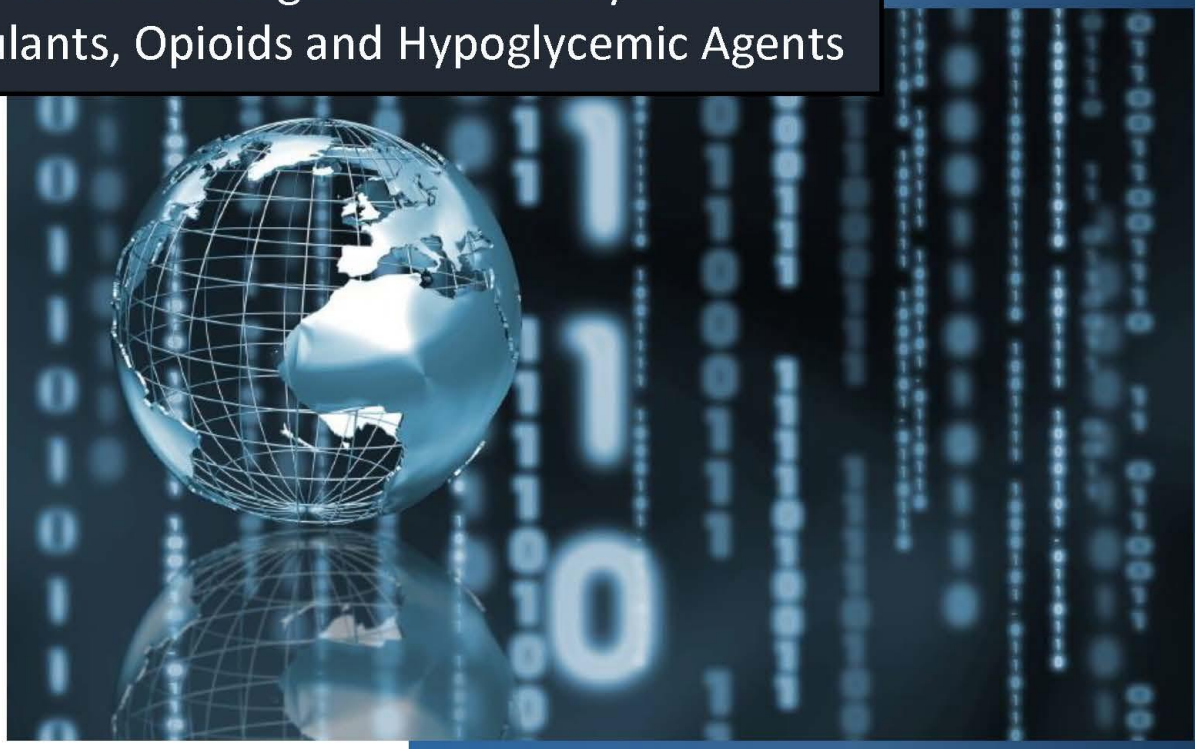
Washington State Hospital Association

2017

Report Writing Specifications

Adverse Drug Events Primary Measures
Anticoagulants, Opioids and Hypoglycemic Agents



ALASKA STATE HOSPITAL & NURSING HOME ASSOCIATION

Partnership for Patients

Washington State Hospital Association

Report Writing Specifications

Adverse Drug Events Primary Measures
Anticoagulants, Opioids and Hypoglycemic Agents

Washington State Hospital Association 2017

Contents

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Special Thanks to the WSHA ADE Report Writing Group for developing the ADE pseudocodes:

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Terms Used in this Document

Primary Measures: These preferred measures are clinically specific and have been developed to provide relevant data to identify and assess areas for improvement.

Option 2 Measures: These measures are not as clinically specific, but are less complex to collect manually. They have been created for hospitals who are unable to collect and submit primary measure data. More information about Option 2 measures can be found on ADE page of WSHA's website[1].

Pseudocode: A pseudocode is an algorithm written to facilitate the report writing process and data abstraction from the electronic health record (EHR). This type of code is intended to be read by humans and not by a computer. Report writers are able to take the information provided in a pseudocode and translate it into code specific to the EHR used at their hospital.

Clinical Translation: A clinical translation column has been included to describe, in clinical terms, the goal for each section of the pseudocode.

Quality Benchmarking System (QBS): Secure, web-based application that allows hospitals to input data and then track, compare, and analyze the data for use in quality improvement. QBS is brought to you at no charge by the Washington State Hospital Association's Patient Safety Program. Hospitals have the ability to share their data with other hospitals to aid their quality improvement efforts. As improvement projects are implemented, users can focus on whether these interventions are truly making a difference. QBS helps with data display, analysis, and timely dissemination, and is a powerful tool for those who work with quality data.

[1] http://www.wsha.org/quality-safety/projects/medication/

Background

Adverse drug events (ADE) account for 34% of inpatient harms[2]. The Institute of Medicine (IOM) estimates that 1.5 million preventable ADEs occur each year.[3] On average, every patient admitted to the hospital is subject to at least one medication error per day, accounting for approximately $3.5 billion additional costs.[4,5]

According to the National Action Plan for Adverse Drug Event Prevention[6], a review of national inpatient and outpatient data identified three types of ADEs that are common, clinically significant, preventable and measurable: 1) bleeding caused by anticoagulant overdose, 2) overdose and drug interactions with opioids causing over sedation and respiratory failure, and 3) hypoglycemia caused by inappropriate dosing of hypoglycemic agents.[7]

Goal

Hospitals will:

1. Collect and report ADE data for anticoagulants, opioids and hypoglycemic agents and
2. Reduce ADEs in these three areas by 40% by December 2014.

WSHA is working with hospitals to achieve these goals. All related ADE Measure Definition Sheets and Safety Action Bundles can be found on the ADE page of WSHA's website[8].

Context and Limitations

As of Q3 2013, 43.4% of participating hospitals were collecting and submitting ADE data to WSHA Quality Benchmarking System (QBS). In January 2014, the WSHA ADE Advisory Group reviewed data submission rates, and shared concerns surrounding the time it takes to have reports written at each of their hospitals.

Due to significant challenges with ADE report writing and data mining for hospitals, the Advisory Group recommended convening a group of report writers and clinicians to work together on developing common report writing language for the primary measures. This would not only save time at each of the hospitals, it would also increase standardization in the region and reduce barriers to obtaining ADE data for analysis and harm reduction. This document contains the efforts of the Report Writing subgroup. Most of the hospitals involved in the Report Writing group use Epic as their EHR,

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[2] Noel Elridge, MS, AHRQ Center for Quality Improvement and Patient Safety, "Annual Partnership for Patients Hospital-Acquired Conditions (HACs) Data (2010 Baseline, 2011 Final, and Preliminary 2012)," DRAFT for Presentation January 15, 2014.

[3] "How-to Guide: Prevent Harm from High-alert Medications." Cambridge, MA: Institute for Healthcare Improvement 2012. Web February 2013. http://www.ihi.org/knowledge/Pages/Tools/HowtoGuidePreventHarmfromHighAlertMedications.aspx

[4] Ebbesen .J, Juajordet I., Erikssen J., et al. "Drug-Related Deaths in a Department of Internal Medicine." Arch Intern Med 161 (2001) 2317-2323.

[5] "Anticoagulant Toolkit: Preventing Adverse Drug Events." IHI 2008 Purdue University PharmaTap. February 2013. http://www.ihi.org/knowledge/Pages/Tools/AnticoagulantToolkitReducingADEs.aspx

[6] http://www.health.gov/hai/pdfs/ade-action-plan.pdf

[7] U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2013). National Action Plan for Adverse Drug Event Prevention. Washington, DC. Web December 2013. http://www.health.gov/hai/pdfs/ade-action-plan.pdf

[8] http://www.wsha.org/quality-safety/projects/medication/

however the group was mindful when writing pseudocodes to write them in a way that would be useful to all report writers regardless of EHR used.

Although Option 2 measures are available for hospitals who are unable to collect and submit primary measure data, the pseudocodes in this document have been written for the primary measures since 1) the primary measures are the preferred and more clinically specific measures, and 2) the assumption is that hospitals who are submitting Option 2 measures are less likely to have an integrated electronic health record system (EHR).

The pseudocodes presented in this document are intended to be used by hospital report writers, and clinical staff who request and review the data.

For more information about inclusion criteria, exclusion criteria and data submission for these measures, please refer to corresponding ADE Measure Definition Sheets, which are available on the ADE page of WSHA's website[9].

[9] http://www.wsha.org/quality-safety/projects/medication/

Pseudocode for ADE Anticoagulants Primary Measure

This pseudocode is based on the ADE Anticoagulant Measure Definition Sheet [10]

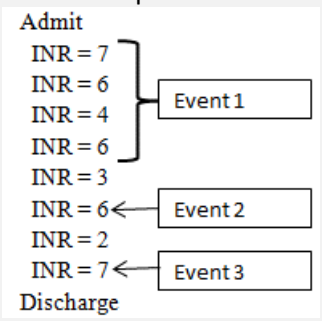
Numerator

Number of patient events with an INR >5 after any warfarin administration (for patients cared for in an inpatient area). A patient that has multiple elevated INRs will be counted as one event until it drops below 3.5 and rises above 5 again.

Denominator

Number of patients (cared for in an inpatient area) on warfarin.

See ADE Anticoagulant Measure Definition Sheet[10] for Inclusion and Exclusion criteria.

Pseudocode	Clinical Translation
1. Start – Identifying Flags	Start by identifying patients according to inclusion and exclusion criteria as defined on the ADE Anticoagulant Measure Definition Sheet[10].
2. Identify Inclusion Criteria Flags IF Lab Component = INR or INR (POC) THEN Count INRLabResult (for status 'Final' or 'Corrected')	Identify patients who have INR lab results.
Create Elevated INR Flag () IF after Warfarin given and before INR<3.5, there is at least one INR>5 THEN 'Y' ELSE 'N' OR if there is at least one INR > 5 after Warfarin and patient subsequently discharged THEN 'Y' ELSE 'N'	Identify patients who had elevated INRs. Include separate events when INR dropped below 3.5 and went back above 5. Count number of events, not number of patients. 

[10] http://www.wsha.org/wp-content/uploads/MeasDefSheet_ADE_Antico.pdf

Pseudocode	Clinical Translation
Patients with Warfarin Flag () IF medication = Warfarin Sodium and IF MAR action=Given[11] THEN 'Y' ELSE 'N'	Identify patients who were given warfarin.
3. Identify Exclusion Criteria Flags	
Diagnosis Flag () IF diagnosis[12] in ('70.0', 70.1', 70.2', '70.21','70.22','70.23',70.3','70.31','70.32','70.33','70.4','70.41','70.42'70.43','70.44','70.49','70.5','70.51','70.52','70.53','70.54','70.59','70.6','70.7','70.71','70.9','155.0','155.1','155.2','197.7','211.5','230.8','235.3','570','571.0','571.1','571.2','571.3','571.4','571.41','571.42','571.49','571.5','571.6','571.8','571.9','572.2','572.3','572.4','572.8','573','573.1','573.2','573.3','573.4','573.5','573.8','573.9','964.2','197.7','155','153','573.3','572.2','289.81') THEN 'Y' ELSE 'N'	Identify patients who have one of the excluded diagnoses.
Exclude patients with Argatroban Flag () IF MAR Action=Given or New Bag and medication= argatroban THEN 'Y' ELSE 'N' Exclude INRs marked 'Canceled', 'Disregard', 'Specimen Contamination' or INRs measured in the ED	Identify patients who were given argatroban.
4. Define Numerator and Denominator	
Numerator Count () Count elevated INR events Where Patient Type = Inpatient or Observation or Rehab AND Elevated INR Flag = Y AND Exclusion Diagnosis Flag = N AND Exclusion Argatroban Flag = N	Compile Numerator: For patients cared for in an inpatient area, include elevated INR events. Exclude patients with certain diagnoses and patients who received argatroban.

[11] Use terms specific for MAR like: Given, Given During Downtime, Override pull

[12] Diagnosis occurs anywhere in the diagnosis sequence.

Pseudocode	Clinical Translation
Denominator Count () Count encounters Where Patient Type = Inpatient or Observation or Rehab AND Exclusion Diagnosis Flag = N AND Warfarin Flag = Y AND Exclusion Argatroban Flag = N	Compile Denominator: Include patients cared for in an inpatient area. Exclude patients with certain diagnoses, and patients who received warfarin and argatroban.

Pseudocode for ADE Opioids Primary Measure

This pseudocode is based on the ADE Opioids Measure Definition Sheet[13]

Numerator

Number of patients (cared for in an inpatient area) who received naloxone < 24 hours after any opioid administration related to over sedation.

Denominator

Number of patients (cared for in an inpatient area) receiving opioids.

See ADE Opioids Measure Definition Sheet[13] for Inclusion and Exclusion criteria.

Pseudocode	Clinical Translation
1. Start – Identifying Flags	Start by identifying patients according to inclusion and exclusion criteria as defined on the ADE Opioids Measure Definition Sheet[13].
2. Identify Inclusion Criteria Flags	
Naloxone Flag () IF MAR action = given[14] AND medication = Naloxone AND prior med = Opioid [15] AND time between <24hrs THEN 1 ELSE 0	Include patient if naloxone was given within 24 hours of opioid being given.

[13] http://www.wsha.org/wp-content/uploads/MeasDefSheet_ADE_Opioid.pdf
[14] Use terms specific for MAR like: Given, Given During Downtime, Override pull
[15] See Opioid list attached at the end of this document

Pseudocode	Clinical Translation
Opioid Flag () IF MAR action = given[16] AND medication = Opioid THEN 1 ELSE 0	Include patients who were given opioids.
3. Identify Exclusion Criteria Flags	
ED flag () IF Naloxone Dispense Location[17] = ED THEN 'Y' ELSE 'N'	Exclude naloxone doses given in the ED.
DX flag () IF diagnosis[18] in (304.00, 304.01, 304.02, 304.70, 304.71, 304.72, 305.50, 305.51, 305.52, 965.00, 965.01, 965.02, 965.09, E850.0, E850.1, E850.2, E950.0, E980.0) THEN 'Y' ELSE 'N'	Exclude these diagnoses within 24 hours of admission.
24 hour flag () IF Naloxone given within 24 hour of admission[19] THEN 'Y' ELSE 'N'	
Procedural Area Flag () IF med given[20] = Naloxone AND Dispense Department Specialty[21] in (CT Scan, Day Surgery, Echo, EKG, MRI, Nuclear Medicine, PET/CT Scan, Post Anes Care, IP Post Anesthesia Care, IP Short Stay – Cardiovasc, Cardiac Cath Lab, etc) THEN 'Y' ELSE 'N'	Exclude Naloxone given in PACU and procedural areas (e.g. endoscopy, radiology and cath lab).

[16] U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2013). National Action Plan for Adverse Drug Event Prevention. Washington, DC. Web December 2013. http://www.health.gov/hai/pdfs/ade-action-plan.pdf

[17] This would exclude any status type i.e. inpatient, observation, emergency. If the dose was given in the ED it will be excluded.

[18] In diagnosis sequence: per CMS coding guidelines, 304 codes may not be listed as the principle dx and the E-codes will never be listed as a principle diagnosis.

[19] Admission to bed, regardless of status. For e.g. include inpatient, observation and rehab beds.

[20] Use terms specific for MAR like: Given, Given During Downtime, Override pull

[21] These are general terms. Use terms are specific to your facility.

Pseudocode	Clinical Translation
Infusion flag () IF MAR admin route = Intravenous (IVPB) AND Med=Naloxone THEN 'Y' ELSE 'N'	Exclude naloxone given IV infusion.
4. Define Numerator and Denominator Numerator Count () Count distinct encounters (not doses) Where Patient Type=Inpatient, Observation or Rehab AND Naloxone Flag = 1 AND Opioid Flag =1 AND ED flag = N AND (Dx flag = N OR (Dx flag = Y AND 24 hour flag = N)) AND Infusion flag = N AND Procedural Area Flag = N	Compile Numerator: Include patients cared for in an inpatient area i.e. inpatient, observation and rehab beds. Include patients given naloxone within 24 hours of opioid. Exclude doses given in ED. Exclude doses given within 24 hours of admission for the listed diagnoses. Exclude doses given via IV infusion. Exclude doses given in PACU and procedural areas.
Denominator Count () Count distinct encounters (not doses) Where Patient Type=Inpatient, Observation or Rehab AND Opioid flag =1	Compile Denominator: Include patients given opioids.

List of Opioids

Alfentanil

Codeine Sulfate (and any drug combination containing codeine)

FentaNYL

FentaNYL Citrate

FentaNYL Citrate-NaCl

Fentanyl Cit-Ropivacaine-NaCl

Fentanyl-Bupivacaine-NaCl

Fentanyl-Droperidol

Hydrocodone

Hydrocodone-Acetaminophen

Hydrocodone-Homatropine

HYDROmorphone HCl

HYDROmorphone HCl-NaCl

Hydromorphone-Bupivacaine-NaCl

Hydromorphone-Guaifenesin

Meperidine HCl

Meperidine HCl-Sodium Chloride

Meperidine-Promethazine

Methadone

Morphine Sulfate

Morphine Sulfate Beads

Morphine Sulfate in Dextrose

Morphine Sulfate Liposome

Morphine Sulfate Microinfusion

Morphine Sulfate-NaCl	Oxycodone	Oxymorphone
Morphine-Naltrexone	Oxycodone-Acetaminophen	Remifentanil HCl
Opium Tincture	Oxycodone-Aspirin	SUFentanil Citrate

Pseudocode for ADE Hypoglycemic Agents Primary Measure

This pseudocode is based on the ADE Hypoglycemic Agents Measure Definition Sheet[22].

Numerator

Number of patient blood glucose (BG) levels of <50 mg/dl after any hypoglycemic agent administration (for patients cared for in an inpatient area). Blood glucose (BG) is Point of Care (POC) and/or serum test results

Denominator

Number of patients (cared for in an inpatient area) receiving hypoglycemic agents (oral & insulin).

See ADE Hypoglycemic Agents Measure Definition Sheet[22] for Inclusion/Exclusion criteria

Pseudocode	Clinical Translation
1. Start – Identifying Flags	Start by identifying patients according to inclusion and exclusion criteria as defined on the ADE Hypoglycemic Agents Measure Definition Sheet[22].
2. Identify Inclusion Criteria Flags	
Patients with Hypoglycemic Agent Flag () IF medication = hypoglycemic agents[23] and IF MAR action=Given(1)[24] or New Bag THEN 'Y' ELSE 'N' Hypoglycemic Event() IF Lab Component[25]= LAB PERFORM POC GLUC, GLUCOSE,GLUCOSE FASTING, GLUCOSE 30MIN, GLUCOSE 2HR PP AND = resulted AND Result Value <50 mg/dl THEN 1 ELSE 0	Include patients who were given hypoglycemic agents. Note: For Epic users, "New Bag" indicates IV infusion given. Include any relevant MAR actions for other EHR systems. Include patients who have point of care and serum blood glucose lab results of <50 mg/dl.
3. Identify Exclusion Criteria Flags	
ED Reading Flag() IF blood glucose measured when patient location = ED THEN 'Y' ELSE 'N'	Exclude blood glucose readings collected while patient located in the Emergency Department.

[22] http://www.wsha.org/wp-content/uploads/MeasDefSheet_ADE_Hypo.pdf

[23] See Hypoglycemic Agents list attached at the end of this document

[24] Use terms specific for MAR like: Given, Given During Downtime, Override pull

[25] Epic Component IDs: 3390, 2311, 2301, 2242, 3157, 59, 1741, 1998, 15, 1125, 2662, 665, 1893, 3087, 2406. Note to hospitals using other EHRs: use terms specific to your facility and EHR.

Pseudocode	Clinical Translation
4. Additional Reading Flag()	
Any additional pre-intervention lab results of BG <50 mg/dl if they are **within 30 minutes** from the result time of the initial BG < 50 mg/dl. *The purpose of this is to exclude double checks confirming the initial low BG < 50 mg/dl, before intervention*	Exclude the lab results if they are within 30 minutes from the result time of the last level. Note it's "result time" vs "draw time" as a baseline since for laboratory blood glucose level, the draw time and the result time may vary a bit.
Any pre-intervention results if a second BG drawn is **within 5 minutes** of the first BG drawn, and the second one is **>/= 70 mg/dl**. *The purpose of this exclusion is to provide parameters to exclude erroneous readings that are verified after double checking an initial BG level appearing potentially erroneous based on patient signs and symptoms (or lack there-of)*.	Exclude the results if an additional BG is drawn to confirm whether or not the first was erroneous, if patient is not clinically symptomatic of such a low BG. The secondary BG double check (to confirm or rule out erroneous first reading) must be done within 5 minutes of the first. If the follow up BG drawn is >/= 70 mg/dl, then the original BG of < 50 mg/dl can be excluded.
5. Define Numerator and Denominator	
Numerator Count () Count glucose readings Where Patient Type = Inpatient or Observation or Rehab AND ED Reading Flag = N AND Hypoglycemic Event >0	Compile Numerator: Include hypoglycemic events for patients cared for in an inpatient area. Exclude ED readings.
Denominator Count () Count Encounters Where Patient Type = Inpatient or Observation or Rehab AND hypoglycemic agent Flag[26] = Y	Compile Denominator: Include patients cared for in an inpatient area who received hypoglycemic agents.

[26] All patients receiving a hypoglycemic agent

List of Hypoglycemic Agents

ShortMedicationNM

acarbose

AcetoHEXAMIDE

ACTOPLUS MET

ACTOPLUS MET XR

ACTOS

Alogliptin Benzoate

Alogliptin-Metformin HCl

Alogliptin-Pioglitazone

AMARYL

APIDRA

APIDRA OPTICLIK

APIDRA SOLOSTAR

APPFORMIN

APPFORMIN-D

AVANDAMET

AVANDARYL

AVANDIA

Bromocriptine Mesylate

BYDUREON

BYETTA

BYETTA 10 MCG PEN

BYETTA 5 MCG PEN

chlorproPAMIDE

CYCLOSET

DIABETA

DIABINESE

DUETACT

exenatide

EXUBERA

FORTAMET

Glibenclamide

glimepiride

GLIPIZIDE

GLIPIZIDE XL

GLIPIZIDE-METFORMIN

GlipiZIDE-Metformin HCl

GLUCOPHAGE

GLUCOPHAGE XR

GLUCOTROL

GLUCOTROL XL

GLUCOVANCE

GLUMETZA

glyBURIDE

glyBURIDE micronized

Glyburide-Metformin

GLYCRON

GLYNASE

GLYSET

HUMALOG

Humalog Mix 50/50

HUMALOG MIX 75/25

HUMALOG PEN

HUMULIN 50/50

HUMULIN 70/30

HUMULIN 70/30 KWIKPEN

HUMULIN 70/30 PEN

HUMULIN L

HUMULIN N

HUMULIN N KWIKPEN

HUMULIN N PEN

HUMULIN R

HUMULIN U

ILETIN I LENTE

ILETIN I NPH

ILETIN I REGULAR

ILETIN II LENTE (PORK)

ILETIN II NPH (PORK)

ILETIN II REGULAR (PORK)

insulin (regular)

insulin (regular) 1 unit/mL in sterile diluent dilution

insulin 70/30

insulin aspart (and any other insulin aspart sliding scales)

insulin aspart-protamine insulin aspart

insulin detemir

insulin glargine

insulin glulisine

INSULIN INJECTION

INSULIN ISOPHANE

Insulin Isophane Pork

insulin lente

INSULIN LISP & LISP PROT (HUM)

insulin lispro

insulin lispro protamine & insulin lispro

insulin lispro protamine & insulin lispro mix 75/25

insulin lispro protamine & lispro

insulin novolog 70/30 mix

insulin nph

insulin NPH and regular (human) 50-50

INSULIN PURIFIED LENTE (PORK)

INSULIN PURIFIED NPH (PORK)

INSULIN PURIFIED REGULAR(PORK)

Insulin Reg (Human) Buffered

INSULIN REGULAR

insulin regular (human)

insulin regular (human) 150 units in 0.9 % NaCl (NS) 150 mL

Insulin Regular Human (and any other insulin regular sliding scales)

Insulin Regular Pork

Insulin U-500

INSULIN ZINC

Insulin Zinc Extended Human

Insulin Zinc Pork

JANUMET

JANUMET XR

JANUVIA

JENTADUETO

JUVISYNC

KAZANO

KOMBIGLYZE XR

LANTUS

LEVEMIR

LEVEMIR FLEXPEN

linagliptin

Linagliptin-Metformin HCl

Liraglutide

METAGLIP

metformin

Metformin HCl

MICRONASE

miglitol

nateglinide

NESINA

NOVOLIN 70/30

NOVOLIN 70/30 INNOLET

NOVOLIN 70/30 PENFILL

NOVOLIN 70/30 RELION

NOVOLIN L

NOVOLIN N

NOVOLIN N INNOLET

NOVOLIN N PENFILL

NOVOLIN N RELION

NOVOLIN R

NOVOLIN R INNOLET

NOVOLIN R PENFILL

NOVOLIN R RELION

NOVOLOG

NOVOLOG FLEXPEN

NOVOLOG MIX 50/50

NOVOLOG MIX 70/30

NOVOLOG MIX 70/30 FLEXPEN

NOVOLOG MIX 70/30 PENFILL

NOVOLOG PENFILL

ONGLYZA

ORINASE

OSENI

pioglitazone

Pioglitazone HCl

Pioglitazone HCl-Glimepiride

Pioglitazone HCl-Metformin HCl

pramlintide

Pramlintide Acetate

PRANDIMET

PRANDIN

PRECOSE

regular insulin

RELION 70/30

RELION 70/30 INNOLET

RELION N

RELION N INNOLET

RELION R

Repaglinide

Repaglinide-Metformin HCl

RIOMET

rosiglitazone

Rosiglitazone-Glimepiride

Rosiglitazone-Metformin

Saxagliptin HCl

Saxagliptin-Metformin

sitagliptin

sitagliptin-metformin

Sitagliptin-Metformin HCl

Sitagliptin-Simvastatin

STARLIX

SYMLIN

SYMLINPEN 120

SYMLINPEN 60

THSC GLYBURIDE

TOLAZamide

TOLBUTamide

TOLINASE

TRADJENTA

VELOSULIN BR (RDNA)

VICTOZA