

# Practical Instructions for Building a Postpartum Hemorrhage Risk Prediction Model in Epic

# Open Epic's Rule Editor



Create a Rule for Each Model Variable

Rule Selection

Select an existing rule

Context:

Rule:

Create a new rule

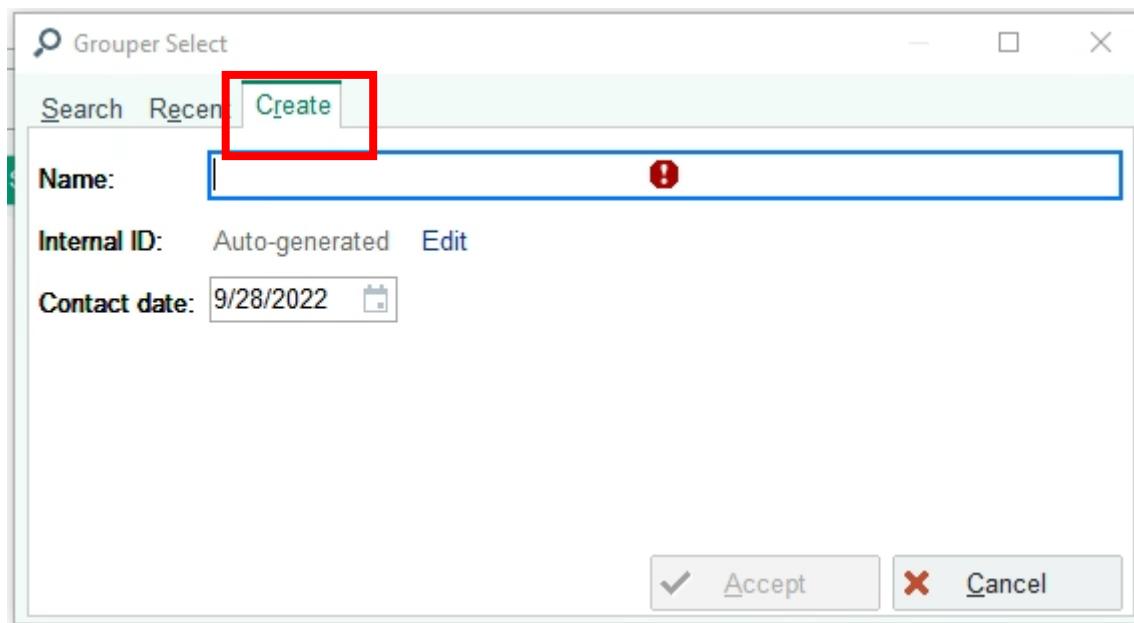
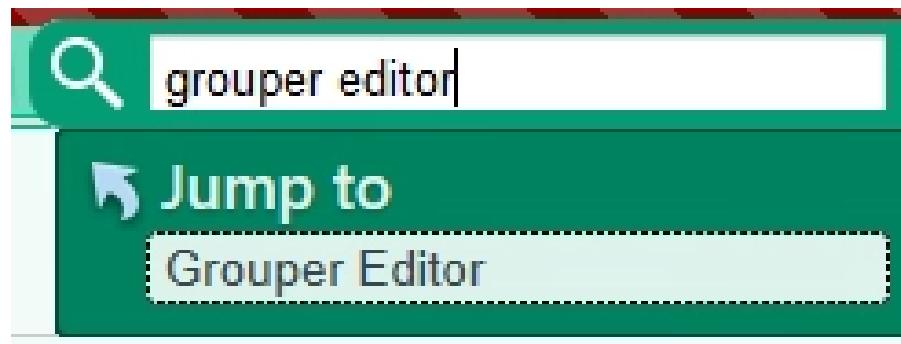
Context:

Name:  ID:

Copy from:

Open as Read-Only    Accept    Cancel

# Some Rule's Will Require Creation of Groupers



# Model variable: Instrumented Vaginal Delivery

VUMC VCLIC PPH Delivery Type Instrumented 774917

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » OB Delivery Record: Mom » ↗ OB Delivery: Delivery Method	Contain Any	Vaginal, Forceps [255] Vaginal, Vacuum (Extractor) [254]	Number	1	X
2	Constant » ↗ Always One	=	1	Number	0	X

# Model variable: Cesarean Delivery

VUMC VCLIC PPH Delivery Type Cesarean 774918

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » OB Delivery Record: Mom » ↗ OB Delivery: Delivery Method	Contain Any	C-Section, Unspecified [253] C-Section, Classical [260] C-Section, Low Transverse [251] C-Section, Low Vertical [259]	Number	1	X
2	Constant » ↗ Always One	=	1	Number	0	X

# Model variable: Prior Postpartum Hemorrhage

VUMC VCLIC PPH Prior PPH 774916

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » 	=	1	Number	1	
 <b>Patient Has Diagnosis or Problem in Grouper</b>						
Primary registry grouper item						
Secondary registry grouper item						
Primary diagnosis grouper						
 <b>VUMC VCLIC PPH EDG PPH [129...]</b>						
2	Patient » 	=	History of one postpartum hemorrhage History of more than one postpartum hemorrhage	Number	1	
 <b>Last Flowsheet Value for Patient</b>						
Flowsheet Row						
 <b>R OB PPH RISK HISTORY OF PP...</b>						
3	Constant » 	=	1	Number	0	
 <b>Always One</b>						

This rule requires a grouper for PPH diagnosis codes...

# Grouper: Postpartum Hemorrhage Diagnosis Codes

**Grouper Editor** ? X

Record name: **VUMC VCLIC PPH EDG PPH** ID: **129844**

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: **Diagnosis Master [EDG]** Type: **ICD Codes**

Allow inactive record selection  
 Hide from SlicerDicer

General Info		Grouper Info	Problem Template	Clinical Settings
	Code Set	ICD Code		Code Label
1	ICD-10-CM	072		Postpartum hemorrhage
2	ICD-10-CM	072.0		Third-stage hemorrhage
3	ICD-10-CM	072.1		Other immediate postpartum hemorrhage
4	ICD-10-CM	072.2		Delayed and secondary postpartum hemorrhage
5	ICD-10-CM	072.3		Postpartum coagulation defects
6				

# Model variable: Antepartum Hematocrit

VUMC VCLIC PPH AP Hematocrit 774915

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient »	<>		Property Column Value	----
	Last Lab Value (Numeric)				
	Base Names				
	<input checked="" type="checkbox"/> HCT <input checked="" type="checkbox"/> HEMATOCRI3				
	Common Names				
	Lab Components Grouper				
	LOINC Code Grouper				
	Look Back Period				
	31				
	Include Unsuccessful Attempts?				
	<input type="checkbox"/> No				
2	Constant »	=	1	Number	<span style="border: 2px solid red; padding: 2px;">36</span>
	Always One				

Missing values default to  
the median value of 36

# Model variable: Placenta Accreta Spectrum Disorder

VUMC VCLIC PPH Placenta Stage Abnormal 774914

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient »	=	1	Number	1

Patient Has Diagnosis or Problem in Grouper  
Primary registry grouper item  
Secondary registry grouper item  
Primary diagnosis grouper  
VUMC VCLIC PPH EDG PLACENTA...  
Secondary diagnosis grouper  
Exclude missing dx  
Diagnosis/problem type  
Only active problems?  
 Yes  
VTE measure option  
Problem class  
Patient »   
 Last Flowsheet Value for Patient  
Flowsheet Row  
R OB PPH RISK SUSPECTED PLA...

This rule requires a grouper for PAS diagnosis codes...

3	Constant »	=	1	Number	0
---	------------	---	---	--------	---

Always One

# Grouper: Placenta Accreta Spectrum Diagnosis Codes

## Grouper Editor



Record name: VUMC VCLIC PPH EDG PLACENTA STAGE ABNORMAL ID: 129842

Provider-friendly name:

External ID type: External ID:

Description:

Master file: Diagnosis Master [EDG] Type: ICD Codes

Allow inactive record selection

Hide from SlicerDicer

### General Info

### Grouper Info

### Problem Template

### Clinical Settings

	Code Set	ICD Code	Code Label
1	ICD-10-CM	O43.21	Placenta accreta
2	ICD-10-CM	O43.22	Placenta increta
3	ICD-10-CM	O43.23	Placenta percreta
4	ICD-10-CM	O43.211	Placenta accreta, first trimester
5	ICD-10-CM	O43.212	Placenta accreta, second trimester
6	ICD-10-CM	O43.213	Placenta accreta, third trimester
7	ICD-10-CM	O43.219	Placenta accreta, unspecified trimester
8	ICD-10-CM	O43.221	Placenta increta, first trimester
9	ICD-10-CM	O43.222	Placenta increta, second trimester
10	ICD-10-CM	O43.223	Placenta increta, third trimester
11	ICD-10-CM	O43.229	Placenta increta, unspecified trimester
12	ICD-10-CM	O43.231	Placenta percreta, first trimester
13	ICD-10-CM	O43.232	Placenta percreta, second trimester
14	ICD-10-CM	O43.233	Placenta percreta, third trimester
15	ICD-10-CM	O43.239	Placenta percreta, unspecified trimester

[additional codes omitted due to space constraints]

# Model variable: General Anesthesia

VUMC VCLIC PPH General Anesthesia 774919

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient » OB Delivery Record: Mom » ↗ OB Delivery: Anesthesia	=	General [253]	Number	1
2	Patient » ↗ Medication Grouper w/ MAR Action Medication grouper VUMC VCLIC PPH ERX GENERAL ...	=	Yes [1]	Number	1
3	Constant » ↗ Always One	=	1	Number	0

MAR actions

Given New Bag Bolus Push Self Administered Via Pump

Lookback logic

Hours count back from now [2]

Hours

48.00

First/Any dose

Any dose [2]

Cross Encounter

No

Exclude Mixtures

This rule requires a grouper for medication codes...

# Grouper: General Anesthesia Medication Codes

Grouper Editor ? X

Record name: VUMC VCLIC PPH ERX GENERAL ANESTHETICS ID: 129846

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: Medication File [ERX] Type: General  Allow inactive record selection  Hide from SlicerDicer

General Info Grouper Info Medication Concepts

Pharmaceutical Class	Pharmaceutical Subclass	Simple Generic Med	Limit to Route
1	1	1 SUCCINYLCHOLINE CHLORIDE [154797] 2 SUCCINYLCHOLINE IN 0.9%NAACL/PF [1] 3 SUCCINYLCHOLINE IN 0.9% NAACL [180] 4 SUCCINYLCHOLINE/SOD CL,ISO/PF [16] 5 ROCURONIUM BROMIDE [156589] 6 SEVOFLURANE [156729] 7 ISOFLURANE [154598] 8	1
<input type="checkbox"/> Exclude Routes			
RxNorm Code	AHFS Code	ATC	Group Synonyms
1	1	1	1

Medication Compile Logic: Simple Generic Med

# Model variable: Multiple Gestation

VUMC VCLIC PPH Multiple Gestation 774923

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » ↗ Patient Has Diagnosis or Problem in Grouper Primary registry grouper item	=	1	Number	1	X
	Secondary registry grouper item					
	Primary diagnosis grouper					
	VUMC VCLIC PPH EDG MULTIPLE...					
	Secondary diagnosis grouper					
	Exclude missing dx					
	Diagnosis/problem type					
	Only active problems?					
	Yes					
	VTE measure option					
	Problem class					
2	Constant » ↗ Always One	=	1	Number	0	X

This rule requires a grouper for multiple gestation diagnosis codes...

# Grouper: Multiple Gestation Diagnosis Codes

## Grouper Editor



Record name: VUMC VCLIC PPH EDG MULTIPLE GESTATION ID: 129848

Provider-friendly name:

External ID type: External ID:

Description:

Master file: Diagnosis Master [EDG] Type: ICD Codes

Allow inactive record selection

Hide from SlicerDicer

General Info			
	Code Set	ICD Code	Code Label
1	ICD-10-CM	O30	Multiple gestation
2	ICD-10-CM	O30.00	Twin pregnancy, unspecified number of placenta and unspecified number of fetus
3	ICD-10-CM	O30.001	Twin pregnancy, unspecified number of placenta and unspecified number of fetus
4	ICD-10-CM	O30.002	Twin pregnancy, unspecified number of placenta and unspecified number of fetus
5	ICD-10-CM	O30.003	Twin pregnancy, unspecified number of placenta and unspecified number of fetus
6	ICD-10-CM	O30.009	Twin pregnancy, unspecified number of placenta and unspecified number of fetus
7	ICD-10-CM	O30.01	Twin pregnancy, monochorionic/monoamniotic
8	ICD-10-CM	O30.011	Twin pregnancy, monochorionic/monoamniotic, first trimester
9	ICD-10-CM	O30.012	Twin pregnancy, monochorionic/monoamniotic, second trimester
10	ICD-10-CM	O30.013	Twin pregnancy, monochorionic/monoamniotic, third trimester
11	ICD-10-CM	O30.019	Twin pregnancy, monochorionic/monoamniotic, unspecified trimester
12	ICD-10-CM	O30.02	Conjoined twin pregnancy
13	ICD-10-CM	O30.021	Conjoined twin pregnancy, first trimester
14	ICD-10-CM	O30.022	Conjoined twin pregnancy, second trimester
15	ICD-10-CM	O30.023	Conjoined twin pregnancy, third trimester

[additional codes omitted due to space constraints]

# Model variable: Placenta Previa

VUMC VCLIC PPH Placenta Previa 774975

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » <a href="#">Patient Has Diagnosis or Problem in Grouper</a>	=	1	Number	1	X
	Primary registry grouper item					
	Secondary registry grouper item					
	Primary diagnosis grouper					
	VUMC VCLIC PPH EDG PLACENTA...					
	Secondary diagnosis grouper					
	Exclude missing dx					
	Diagnosis/problem type					
	Only active problems?					
	Yes					
2	Patient » <a href="#">Last Flowsheet Value for Patient</a>	String Contain	Placenta previa Low lying placenta	Number	1	X
	Flowsheet Row					
	R OB PPH RISK PLACENTA PREV...					
3	Constant » <a href="#">Always One</a>	=	1	Number	0	X

This rule requires a grouper for placenta previa diagnosis codes...

# Grouper: Placenta Previa Diagnosis Codes

## Grouper Editor

Record name: VUMC VCLIC PPH EDG PLACENTA PREVIA ID: 129850

Provider-friendly name:

External ID type: External ID:

Description:

Master file: Diagnosis Master [EDG] Type: ICD Codes

Allow inactive record selection  Hide from SlicerDicer

	Code Set	ICD Code	Code Label
1	ICD-10-CM	O44	Placenta previa
2	ICD-10-CM	O44.0	Complete placenta previa nos or without hemorrhage
3	ICD-10-CM	O44.00	Complete placenta previa nos or without hemorrhage, unspecified trimester
4	ICD-10-CM	O44.01	Complete placenta previa nos or without hemorrhage, first trimester
5	ICD-10-CM	O44.02	Complete placenta previa nos or without hemorrhage, second trimester
6	ICD-10-CM	O44.03	Complete placenta previa nos or without hemorrhage, third trimester
7	ICD-10-CM	O44.1	Complete placenta previa with hemorrhage
8	ICD-10-CM	O44.10	Complete placenta previa with hemorrhage, unspecified trimester
9	ICD-10-CM	O44.11	Complete placenta previa with hemorrhage, first trimester
10	ICD-10-CM	O44.12	Complete placenta previa with hemorrhage, second trimester
11	ICD-10-CM	O44.13	Complete placenta previa with hemorrhage, third trimester
12	ICD-10-CM	O44.2	Partial placenta previa without hemorrhage
13	ICD-10-CM	O44.20	Partial placenta previa nos or without hemorrhage, unspecified trimester
14	ICD-10-CM	O44.21	Partial placenta previa nos or without hemorrhage, first trimester
15	ICD-10-CM	O44.22	Partial placenta previa nos or without hemorrhage, second trimester
16	ICD-10-CM	O44.23	Partial placenta previa nos or without hemorrhage, third trimester

[additional codes omitted due to space constraints]

# Model variable: Induced Labor

VUMC VCLIC PPH Induction 774922

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » OB Delivery Record: Mom » ↗ OB Delivery: Induction	Contain Any	Gel [1] Misoprostol [2] Dinoprostone [3] Foley/EASI [4] Laminaria [5] Oxytocin [6] AROM [7]	Number	1	X
2	Patient » ↗ Last Flowsheet Value for Patient Flowsheet Row R OB PPH INDUCTION OF LABOR...	=	Yes	Number	1	X
3	Constant » ↗ Always One	=	1	Number	0	X

# Model variable: Augmented Labor

VUMC VCLIC PPH Augmentation 774974

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » OB Delivery Record: Mom » ↗ OB Delivery: Augmentation	Contain Any	Oxytocin [1] AROM [2]	Number	1	X
2	Constant » ↗ Always One	=	1	Number	0	X

# Model variable: Maternal Weight in Kilograms

VUMC VCLIC PPH Weight 774985

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » ↗ Weight: In Specific Unit	<>		Property Column Value	---	X
	Weight Unit		kilograms [kg]			
2	Constant » ↗ Always One	=	1	Number	82	X

Missing values default to  
the median value of 82

# Model variable: White Blood Cell Count

VUMC VCLIC PPH WBC 774981

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient » ↗ <a href="#">Last Lab Value (Numeric)</a>	<>		Property Column Value	----
	Base Names				
	<input checked="" type="checkbox"/> WBC <input checked="" type="checkbox"/> WBCWMC2				
	Common Names				
	Lab Components Grouper				
	LOINC Code Grouper				
	Look Back Period				
	31				
	Include Unsuccessful Attempts?				
	No				
2	Constant » ↗ <a href="#">Always One</a>	=	1	Number	10.3

Missing values default to  
the median value of 10.3

# Model variable: Normal Size for Gestational Age

VUMC VCLIC PPH Size of Baby NGA 774988

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » ↗ Patient Has Diagnosis or Problem in Grouper	=	1	Number	0	X
	Primary registry grouper item					
	Secondary registry grouper item					
	Primary diagnosis grouper					
	VUMC VCLIC PPH EDG LGA [129...]					
	Secondary diagnosis grouper					
	VUMC VCLIC PPH EDG SGA [129...]					
	Exclude missing dx					
	Diagnosis/problem type					
	Only active problems?					
	VTE measure option					
	Problem class					
2	Constant » ↗ Always One	=	1	Number	1	X

This rule requires groupers for SGA and LGA diagnosis codes...

# Model variable: Large for Gestational Age

VUMC VCLIC PPH Size of Baby LGA 774989

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » ↗ Patient Has Diagnosis or Problem in Grouper Primary registry grouper item  Secondary registry grouper item  Primary diagnosis grouper VUMC VCLIC PPH EDG LGA [129...] Secondary diagnosis grouper  Exclude missing dx  Diagnosis/problem type  Only active problems?  VTE measure option  Problem class	=	1	Number	1	X
2	Constant » ↗ Always One	=	1	Number	0	X

This rule requires a grouper for LGA diagnosis codes...

# Grouper: Large for Gestational Age Diagnosis Codes

## Grouper Editor



Record name: VUMC VCLIC PPH EDG LGA ID: 129857

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: **Diagnosis Master [EDG]**

Type: **ICD Codes**

Allow inactive record selection

Hide from SlicerDicer

### General Info

### Grouper Info

### Problem Template

### Clinical Settings

	Code Set	ICD Code	Code Label
1	ICD-10-CM	O36.6	Maternal care for excessive fetal growth
2	ICD-10-CM	O36.60	Maternal care for excessive fetal growth, unspecified trimester
3	ICD-10-CM	O36.60X0	Maternal care for excessive fetal growth, unspecified trimester, not applicable or unspecified
4	ICD-10-CM	O36.61	Maternal care for excessive fetal growth, first trimester
5	ICD-10-CM	O36.62	Maternal care for excessive fetal growth, second trimester
6	ICD-10-CM	O36.63	Maternal care for excessive fetal growth, third trimester
7	ICD-10-CM	O36.60X1	Maternal care for excessive fetal growth, unspecified trimester, fetus 1
8	ICD-10-CM	O36.60X2	Maternal care for excessive fetal growth, unspecified trimester, fetus 2
9	ICD-10-CM	O36.60X3	Maternal care for excessive fetal growth, unspecified trimester, fetus 3
10	ICD-10-CM	O36.60X4	Maternal care for excessive fetal growth, unspecified trimester, fetus 4
11	ICD-10-CM	O36.60X5	Maternal care for excessive fetal growth, unspecified trimester, fetus 5
12	ICD-10-CM	O36.60X9	Maternal care for excessive fetal growth, unspecified trimester, other fetus
13	ICD-10-CM	O36.61X0	Maternal care for excessive fetal growth, first trimester, not applicable or unspecified
14	ICD-10-CM	O36.61X1	Maternal care for excessive fetal growth, first trimester, fetus 1
15	ICD-10-CM	O36.61X2	Maternal care for excessive fetal growth, first trimester, fetus 2

[additional codes omitted due to space constraints]

# Grouper: Small for Gestational Age Diagnosis Codes

## Grouper Editor



Record name: VUMC VCLIC PPH EDG SGA ID: 129856

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: **Diagnosis Master [EDG]** Type: **ICD Codes**

Allow inactive record selection  
 Hide from SlicerDicer

General Info			
	Code Set	ICD Code	Code Label
1	ICD-10-CM	O36.5	Maternal care for known or suspected poor fetal growth
2	ICD-10-CM	O36.51	Maternal care for known or suspected placental insufficiency
3	ICD-10-CM	O36.511	Maternal care for known or suspected placental insufficiency, first trimester
4	ICD-10-CM	O36.5110	Maternal care for known or suspected placental insufficiency, first trimester, not applicable or unspecified
5	ICD-10-CM	O36.5111	Maternal care for known or suspected placental insufficiency, first trimester, fetus 1
6	ICD-10-CM	O36.5112	Maternal care for known or suspected placental insufficiency, first trimester, fetus 2
7	ICD-10-CM	O36.5113	Maternal care for known or suspected placental insufficiency, first trimester, fetus 3
8	ICD-10-CM	O36.5114	Maternal care for known or suspected placental insufficiency, first trimester, fetus 4
9	ICD-10-CM	O36.5115	Maternal care for known or suspected placental insufficiency, first trimester, fetus 5
10	ICD-10-CM	O36.5119	Maternal care for known or suspected placental insufficiency, first trimester, other fetus
11	ICD-10-CM	O36.512	Maternal care for known or suspected placental insufficiency, second trimester
12	ICD-10-CM	O36.5120	Maternal care for known or suspected placental insufficiency, second trimester, not applicable or unspecified
13	ICD-10-CM	O36.5121	Maternal care for known or suspected placental insufficiency, second trimester, fetus 1
14	ICD-10-CM	O36.5122	Maternal care for known or suspected placental insufficiency, second trimester, fetus 2
15	ICD-10-CM	O36.5123	Maternal care for known or suspected placental insufficiency, second trimester, fetus 3
16	ICD-10-CM	O36.5124	Maternal care for known or suspected placental insufficiency, second trimester, fetus 4

[additional codes omitted due to space constraints]

# Model variable: Labor Length >20 Hours

VUMC VCLIC PPH Labor Greater than 20 Hours 774982

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » OB Delivery Record: Mom » ↗ OB Delivery: Labor Onset Time	=		Number	0	X
2	Patient » ↗ OB Events Time Between Events	>	20	Number	1	X
	Start Events					
	✓ OB LABOR ONSET EVENT [165]					
	End Events					
	✓ OB BABY DELIVERY EVENT [166]					
	Require End Event?					
	No					
	Last Occurrence of Start Event?					
	Last Occurrence of End Event?					
3	Constant » ↗ Always One	=	1	Number	0	X

# Model variable: Admission Pulse

VUMC VCLIC PPH First Pulse or Heart Rate 775020

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » ↗ First Flowsheet Value (Numeric)	<>		Property Column Value	----	X
	FLOWSCHEET ROW					
	PULSE [8]					
2	Patient » ↗ First Flowsheet Value (Numeric)	<>		Property Column Value	----	X
	FLOWSCHEET ROW					
	R HEART RATE MONITOR [301240]					
3	Constant » ↗ Always One	=	1	Number	88	X

Missing values default to  
the median value of 88

# Model variable: Premature Rupture of Membranes

VUMC VCLIC PPH PROM 774983

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient »	=	1	Number	1	
	Patient Has Diagnosis or Problem in Grouper					
	Primary registry grouper item					
	Secondary registry grouper item					
	Primary diagnosis grouper					
	VUMC VCLIC PPH EDG PROM [12...]					
	Secondary diagnosis grouper					
	Exclude missing dx					
	Diagnosis/problem type					
	Only active problems?					
	<input checked="" type="checkbox"/> Yes					
	VTE measure option					
	Problem class					
2	Constant »	=	1	Number	0	
	Always One					

This rule requires a grouper for PROM diagnosis codes...

# Grouper: PROM Diagnosis Codes

## Grouper Editor



Record name: VUMC VCLIC PPH EDG PROM ID: 129852

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: Diagnosis Master [EDG] Type: ICD Codes

Allow inactive record selection  
 Hide from SlicerDicer

General Info			
	Code Set	ICD Code	Code Label
1	ICD-10-CM	O42	Premature rupture of membranes
2	ICD-10-CM	O42.0	Premature rupture of membranes, onset of labor within 24 hours of rupture
3	ICD-10-CM	O42.00	Premature rupture of membranes, onset of labor within 24 hours of rupture, unspecified weeks of gestation
4	ICD-10-CM	O42.01	Preterm premature rupture of membranes, onset of labor within 24 hours of rupture
5	ICD-10-CM	O42.011	Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, first trimester
6	ICD-10-CM	O42.012	Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, second trimester
7	ICD-10-CM	O42.013	Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, third trimester
8	ICD-10-CM	O42.019	Preterm premature rupture of membranes, onset of labor within 24 hours of rupture, unspecified trimester
9	ICD-10-CM	O42.1	Premature rupture of membranes, onset of labor more than 24 hours following rupture
10	ICD-10-CM	O42.10	Premature rupture of membranes, onset of labor more than 24 hours following rupture, unspecified weeks of gestation
11	ICD-10-CM	O42.11	Preterm premature rupture of membranes, onset of labor more than 24 hours following rupture
12	ICD-10-CM	O42.111	Preterm premature rupture of membranes, onset of labor more than 24 hours following rupture, first trimester
13	ICD-10-CM	O42.112	Preterm premature rupture of membranes, onset of labor more than 24 hours following rupture, second trimester
14	ICD-10-CM	O42.113	Preterm premature rupture of membranes, onset of labor more than 24 hours following rupture, third trimester
15	ICD-10-CM	O42.119	Preterm premature rupture of membranes, onset of labor more than 24 hours following rupture, unspecified trimester
16	ICD-10-CM	O42.12	Full-term premature rupture of membranes, onset of labor more than 24 hours following rupture

[additional codes omitted due to space constraints]

# Model variable: Calcium Level

VUMC VCLIC PPH CA 774921

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient » <a href="#">Last Lab Value (Numeric)</a>	<>		Property Column Value	----
	Base Names				<input checked="" type="checkbox"/> CALCIUM <input checked="" type="checkbox"/> CALCIUM2
	Common Names				
	Lab Components Grouper				
	LOINC Code Grouper				
	Look Back Period				<input type="button" value="31"/>
2	Constant » <a href="#">Always One</a>	=	1	Number	8.9

Missing values default to  
the median value of 8.9

# Model variable: Nifedipine Administration

VUMC VCLIC PPH Nifedipine 775021

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » <a href="#">Medication Grouper w/ MAR Action</a>	=	Yes [1]	Number	1	X
	Medication grouper					
	VUMC VCLIC PPH ERX NIFEDIPI...					
	MAR actions					
	<input checked="" type="checkbox"/> Given <input checked="" type="checkbox"/> New Bag <input checked="" type="checkbox"/> Bolus <input checked="" type="checkbox"/> Push <input checked="" type="checkbox"/> Self Administered Via Pump					
	Lookback logic					
	Hours count back from now [2]					
	Hours					
	48.00					
	First/Any dose					
	Any dose [2]					
	Cross Encounter					
	No					
	Exclude Mixtures					
2	Constant » <a href="#">Always One</a>	=	1	Number	0	X

This rule requires a grouper for medication codes...

# Grouper: Nifedipine Medication Codes

## Grouper Editor

?

Record name: VUMC VLCIC PPH ERX NIFEDIPINE ID: 129869

ID: 129869

Provider-friendly name:

External ID type:  External ID:

**Description:**

Master file: Medication File [ERX] Type: General

Type: General



Allow inactive record selection

Hide from SlicerDicer

## General Info

### Grouper Info

## Medication Concepts

Pharmaceutical Class	Pharmaceutical Subclass	Simple Generic Med	Limit to Route
1	1	1 NIFEDIPINE [153990] 2 NIFEDIPINE, MICRONIZED [193749] 3	1

Exclude Routes

Medication Compile Logic: Simple Generic Med

# Model variable: Hypertensive Disorders

VUMC VCLIC PPH Hypertensive Disorder 774987

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient »	=	1	Number	1	
	Patient Has Diagnosis or Problem in Grouper					
	Primary registry grouper item					
	Secondary registry grouper item					
	Primary diagnosis grouper					
	VUMC VCLIC PPH EDG HYPERTEN...					
	Secondary diagnosis grouper					
	Exclude missing dx					
	Diagnosis/problem type					
	Only active problems?					
	<input checked="" type="checkbox"/> Yes					
	VTE measure option					
	Problem class					
2	Constant »	=	1	Number	0	
	Always One					

This rule requires a grouper for hypertensive disorder diagnosis codes...

# Grouper: Hypertensive Disorder Diagnosis Codes

**Grouper Editor**

Record name: **VUMC VCLIC PPH EDG HYPERTENSIVE DISORDER** ID: **129854**

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: **Diagnosis Master [EDG]** Type: **ICD Codes**

Allow inactive record selection  
 Hide from SlicerDicer

**General Info** **Grouper Info** **Problem Template** **Clinical Settings**

	Code Set	ICD Code	Code Label
1	ICD-10-CM	I10	Essential (primary) hypertension
2	ICD-10-CM	O10	Pre-existing hypertension complicating pregnancy, chi
3	ICD-10-CM	O11	Pre-existing hypertension with pre-eclampsia
4	ICD-10-CM	O13	Gestational (pregnancy-induced) hypertension without
5	ICD-10-CM	O14.0	Mild to moderate pre-eclampsia
6	ICD-10-CM	O14.9	Unspecified pre-eclampsia
7	ICD-10-CM	O14.1	Severe pre-eclampsia
8	ICD-10-CM	O14.2	HELLP syndrome
9	ICD-10-CM	O10.0	Pre-existing essential hypertension complicating pregn
10	ICD-10-CM	O10.01	Pre-existing essential hypertension complicating pregn
11	ICD-10-CM	O10.011	Pre-existing essential hypertension complicating pregn
12	ICD-10-CM	O10.012	Pre-existing essential hypertension complicating pregn
13	ICD-10-CM	O10.013	Pre-existing essential hypertension complicating pregn
14	ICD-10-CM	O10.019	Pre-existing essential hypertension complicating pregn
15	ICD-10-CM	O10.02	Pre-existing essential hypertension complicating child
16	ICD-10-CM	O10.03	Pre-existing essential hypertension complicating the n

[additional codes omitted due to space constraints]

# Model variable: Terbutaline Administration

VUMC VCLIC PPH Terbutaline 775023

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result	X
1	Patient » <a href="#">Edit</a>	=	Yes [1]	Number	1	<a href="#">X</a>
Medication Grouper w/ MAR Action						
Medication grouper						
VUMC VCLIC PPH ERX TERBUTALINE						
MAR actions						
<input checked="" type="checkbox"/> Given <input checked="" type="checkbox"/> New Bag <input checked="" type="checkbox"/> Bolus <input checked="" type="checkbox"/> Push <input checked="" type="checkbox"/> Self Administered Via Pump						
Lookback logic						
Hours count back from now [2]						
Hours						
48.00						
First/Any dose						
Any dose [2]						
Cross Encounter						
No						
Exclude Mixtures						
2	Constant » <a href="#">Edit</a>	=	1	Number	0	<a href="#">X</a>
<a href="#">Edit</a> Always One						

This rule requires a grouper for medication codes...

# Grouper: Terbutaline Medication Codes

## Grouper Editor



Record name: VUMC VCLIC PPH ERX TERBUTALINE ID: 129871

Provider-friendly name:

External ID type: External ID:

Description:

Master file: Medication File [ERX]

Type: General

Allow inactive record selection

Hide from SlicerDicer

Exclude Routes

General Info		Grouper Info		Medication Concepts	
Pharmaceutical Class		Pharmaceutical Subclass		Simple Generic Med	
1		1		1	TERBUTALINE SULFATE [154852]
				2	
RxNorm Code		AHFS Code		ATC	
1		1		1	
Group Synonyms					
1					
Medication Compile Logic: Simple Generic Med					

# Model variable: Platelet Count

VUMC VCLIC PPH Platelet 775022

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient » ↗ Last Lab Value (Numeric)	<=		Property Column Value	---
	Base Names				
	<input checked="" type="checkbox"/> PLT <input checked="" type="checkbox"/> PLATELETCO				
	Common Names				
	Lab Components Grouper				
	LOINC Code Grouper				
	Look Back Period				
	31				
2	Constant » ↗ Always One	=	1	Number	226

Missing values default to  
the median value of 226

# Model variable: Placental Abruptio

VUMC VCLIC PPH Placental Abruptio 775024

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line Result

Show Parameter Values

#	Property	Operator	Value	Result Type	Result
1	Patient »	=	1	Number	1
	Patient Has Diagnosis or Problem in Grouper				
	Primary registry grouper item				
	Secondary registry grouper item				
	Primary diagnosis grouper				
	VUMC VCLIC PPH EDG PLACENTA...				
	Secondary diagnosis grouper				
	Exclude missing dx				
	Diagnosis/problem type				
	Only active problems?				
2	Patient »	=	Yes	Number	1
	Last Flowsheet Value for Patient				
	Flowsheet Row				
	R OB PPH RISK SUSPECTED ABR...				
3	Constant »	=	1	Number	0
	Always One				

This rule requires a grouper for placental abruptio diagnosis codes...

# Grouper: Placental Abruption Diagnosis Codes

## Grouper Editor



Record name: VUMC VCLIC PPH EDG PLACENTAL ABRUPTION ID: 129873

Provider-friendly name:

External ID type:  External ID:

Description:

Master file: Diagnosis Master [EDG] Type: ICD Codes

Allow inactive record selection  
 Hide from SlicerDicer

General Info			
Grouper Info			
Problem Template			
	Code Set	ICD Code	Code Label
1	ICD-10-CM	O45	Premature separation of placenta (abruptio placentae)
2	ICD-10-CM	O45.0	Premature separation of placenta with coagulation defect
3	ICD-10-CM	O45.00	Premature separation of placenta with coagulation defect, unspecified
4	ICD-10-CM	O45.001	Premature separation of placenta with coagulation defect, unspecified
5	ICD-10-CM	O45.002	Premature separation of placenta with coagulation defect, unspecified
6	ICD-10-CM	O45.003	Premature separation of placenta with coagulation defect, unspecified
7	ICD-10-CM	O45.009	Premature separation of placenta with coagulation defect, unspecified
8	ICD-10-CM	O45.01	Premature separation of placenta with afibrinogenemia
9	ICD-10-CM	O45.011	Premature separation of placenta with afibrinogenemia, first trimester
10	ICD-10-CM	O45.012	Premature separation of placenta with afibrinogenemia, second trimester
11	ICD-10-CM	O45.013	Premature separation of placenta with afibrinogenemia, third trimester
12	ICD-10-CM	O45.019	Premature separation of placenta with afibrinogenemia, unspecified trimester
13	ICD-10-CM	O45.02	Premature separation of placenta with disseminated intravascular coagulation
14	ICD-10-CM	O45.021	Premature separation of placenta with disseminated intravascular coagulation
15	ICD-10-CM	O45.022	Premature separation of placenta with disseminated intravascular coagulation
16	ICD-10-CM	O45.023	Premature separation of placenta with disseminated intravascular coagulation

[additional codes omitted due to space constraints]

# Create a Rule to Combine all Previous Model Variable Rules

VUMC VCLIC PPH Risk 775025

Describe what this rule is meant to do.

Evaluation logic: Sum of true lines First true line round((1/(1+(e\*\*(-(0.71342857227413)+(s1\*2.5892271579545)+(s2\*0.133505728809468)+(s3\*2.77392104380623)+(s4\*1.04565497705867)+(s5\*1.43983963163742)+(s6\*1.1791943998781)+(s7\*0.285593765613715)+(s8\*0.486640607380448)+(s9\*1.08751330040449)+(s10\*0.498774041055085)+(s11\*0.834371854323221)+(s12\*0.0452377755565452)+(s13\*0.577633248011877)+(s14\*1.00181447650234)+(s15\*0.0116271010424593)+(s16\*0.357948164701609)+(s17\*0.590685097951371)+(s18\*1.23886677407617)+(s19\*0.0105701634771359)+(s20\*0.656288514665715)+(s21\*0.00177625841205455)+(s22\*0.45834537211493)+(s23\*0.89709431034992)))))\*100,2)

Show Parameter Values

Full model equation goes here

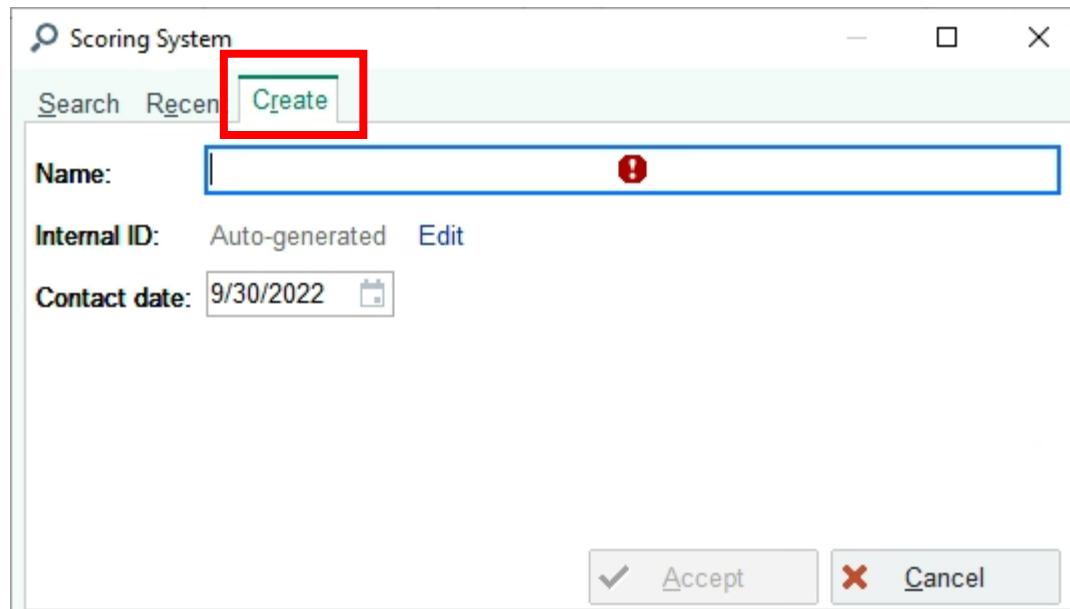

$$\text{round}((1/(1+(e**(-(0.71342857227413)+(s1*2.5892271579545)+(s2*0.133505728809468)+(s3*2.77392104380623)+(s4*1.04565497705867)+(s5*1.43983963163742)+(s6*1.1791943998781)+(s7*0.285593765613715)+(s8*0.486640607380448)+(s9*1.08751330040449)+(s10*0.498774041055085)+(s11*0.834371854323221)+(s12*0.0452377755565452)+(s13*0.577633248011877)+(s14*1.00181447650234)+(s15*0.0116271010424593)+(s16*0.357948164701609)+(s17*0.590685097951371)+(s18*1.23886677407617)+(s19*0.0105701634771359)+(s20*0.656288514665715)+(s21*0.00177625841205455)+(s22*0.45834537211493)+(s23*0.89709431034992)))))*100,2)$$

#	Property	Operator	Value	Result Type	Result	
1	<a href="#">VUMC VCLIC PPH Placenta Stage Abnormal</a> Edit Rule	<>		Property Column Value	----	X
2	<a href="#">VUMC VCLIC PPH AP Hematocrit</a> Edit Rule	<>		Property Column Value	----	X
3	<a href="#">VUMC VCLIC PPH Prior PPH</a> Edit Rule	<>		Property Column Value	----	X
4	<a href="#">VUMC VCLIC PPH Delivery Type Instrumented</a> Edit Rule	<>		Property Column Value	----	X
5	<a href="#">VUMC VCLIC PPH Delivery Type Cesarean</a> Edit Rule	<>		Property Column Value	----	X
6	<a href="#">VUMC VCLIC PPH General Anesthesia</a> Edit Rule	<>		Property Column Value	----	X
7	<a href="#">VUMC VCLIC PPH CA</a> Edit Rule	<>		Property Column Value	----	X
8	<a href="#">VUMC VCLIC PPH Induction</a> Edit Rule	<>		Property Column Value	----	X
9	<a href="#">VUMC VCLIC PPH Multiple Gestation</a> Edit Rule	<>		Property Column Value	----	X
10	<a href="#">VUMC VCLIC PPH Augmentation</a> Edit Rule	<>		Property Column Value	----	X
11	<a href="#">VUMC VCLIC PPH Placenta Previa</a> Edit Rule	<>		Property Column Value	----	X
12	<a href="#">VUMC VCLIC PPH WBC</a> Edit Rule	<>		Property Column Value	----	X
13	<a href="#">VUMC VCLIC PPH Labor Greater than 20 Hours</a> Edit Rule	<>		Property Column Value	----	X
14	<a href="#">VUMC VCLIC PPH PROM</a> Edit Rule	<>		Property Column Value	----	X
15	<a href="#">VUMC VCLIC PPH Weight</a> Edit Rule	<>		Property Column Value	----	X
16	<a href="#">VUMC VCLIC PPH Hypertensive Disorder</a> Edit Rule	<>		Property Column Value	----	X
17	<a href="#">VUMC VCLIC PPH Size of Baby NGA</a> Edit Rule	<>		Property Column Value	----	X
18	<a href="#">VUMC VCLIC PPH Size of Baby LGA</a> Edit Rule	<>		Property Column Value	----	X
19	<a href="#">VUMC VCLIC PPH First Pulse or Heart Rate</a> Edit Rule	<>		Property Column Value	----	X
20	<a href="#">VUMC VCLIC PPH Nifedipine</a> Edit Rule	<>		Property Column Value	----	X
21	<a href="#">VUMC VCLIC PPH Platelet</a> Edit Rule	<>		Property Column Value	----	X
22	<a href="#">VUMC VCLIC PPH Terbutaline</a> Edit Rule	<>		Property Column Value	----	X
23	<a href="#">VUMC VCLIC PPH Placental Abruption</a> Edit Rule	<>		Property Column Value	----	X

# Open Epic's Scoring System Editor



## Create a New Scoring System With the Overall Rule



## Scoring System: VUMC VCLIC PPH RISK [100188]

Scoring system display name: **PPH Risk**

Scoring system print group: **104725 [VUMC VCLIC PPH RISK PRINT GROUP]**

Suppress hover bubble

Score column display name: **PPH Risk**

Width: **400**

Column ID/name: **104989 [VUMC VCLIC PPH RISK SCORE COLUMN]**

**Edit...**

Score change column display name: **PPH Risk Score Changed**

Width: **400**

Column ID/name: **104990 [VUMC VCLIC PPH RISK SCORE CHANGED COL]**

**Edit...**

Time since reviewed col display name: **PPH Risk Time Since Review**

Width: **400**

Column ID/name: **104991 [VUMC VCLIC PPH RISK TIME SINCE REVIEWED]**

**Edit...**

Scoring system record type: **Simple Scoring System [**

[Clinical Monitoring](#)

[LOS Ranges](#)

[Storage Options](#)

Score column display configuration:

	From	To	Color	Icon
1				

Show a hyphen for each rule that returns null

Show an asterisk next to total score if one or more rules return null

Rules:

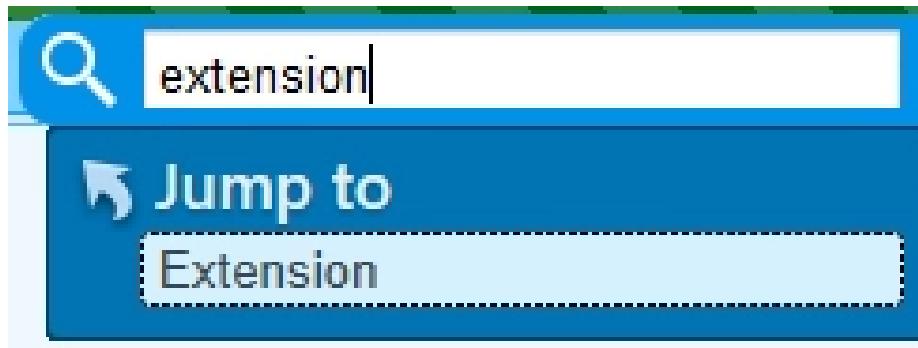
Rules	Type of rule group
1 VUMC VCLIC PPH Risk	
2	

**Edit Rule...**

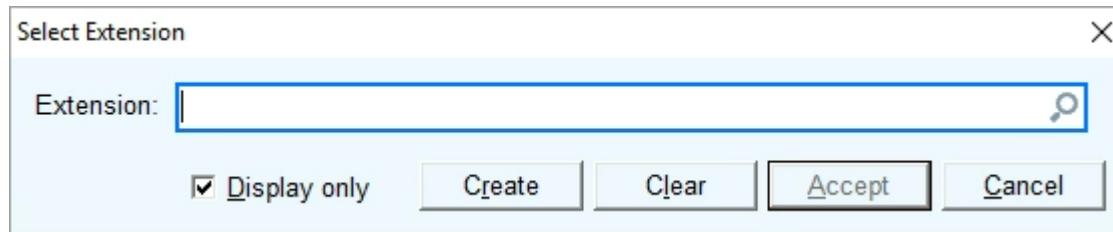
Filter rule:



# Open Epic's Extension Editor



Create an Extension to the Scoring System Output



# Create an Extension to the Scoring System Output

## Extension - VUMC VCLIC PPH Risk [102970]



Audit Trail

Name:

VUMC VCLIC PPH Risk

Type:

Patient List: Text Extension [27001]

Code:

```
$$CERSelectWrapper^JEDPAFP5(patID,patDAT,"775216","","Yes","Patient has PPH","309","","","No","Patient does NOT have PPH","308","","",bedID)
```

Comments:

Extension records of the type 27001-Patient List: Text Extension are used to determine the text that appears in a column in Patient List and other activities that use PAF column records.

This extension record evaluates one or more rules (CER records). The first rule to evaluate to true determines the text, tooltip, back color, font

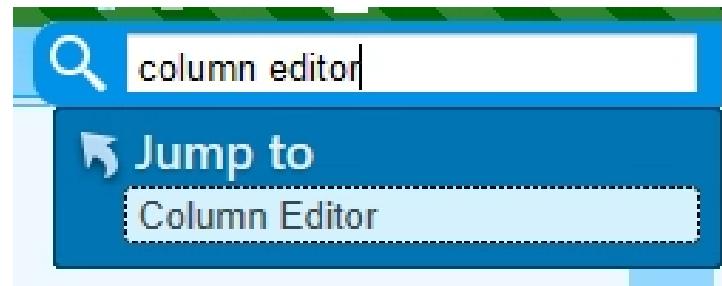
Code template:

CERSELECTWRAPPER-JEDPAFP5 TEXT [494921]

Parameters:

Name	Value
Patient ID	patID
Patient DAT	patDAT
Rules to Evaluate	<input checked="" type="checkbox"/> VUMC VCLIC PPH Yes [775216]
Extensions	
Texts	<input checked="" type="checkbox"/> Yes
Tooltips	<input checked="" type="checkbox"/> Patient has PPH
Back Colors	<input checked="" type="checkbox"/> Red
Font Colors	
Font Styles	

# Open Epic's Column Editor



Create a Column that Points to the Extension

A screenshot of a "Create New Column" dialog box. The dialog has a light blue header with two buttons: "Search Existing Columns" and "Create New Column". Below the header are three input fields: "Column name:" with a red exclamation mark icon, "Column ID:" with a small calendar icon, and "Copy from:" with a magnifying glass icon. The main area of the dialog is a large, empty white space with scroll bars on the right and bottom. At the bottom of the dialog are two buttons: "Accept" with a green checkmark icon and "Cancel" with a red X icon.

# Create a Column that Points to the Extension

## VUMC VCLIC PPH RISK SCORE COLUMN [104989]

### General

Column:

VUMC VCLIC PPH RISK SCORE COLUMN

Caption:

PPH Risk

Technical  
description:



Used by:

1	INPATIENT EMR [26]	▲
2	REPORTING WORKBENC	▼

### Definition and Formatting

### Application Specific Features

### Advanced

### Icon Legend

### Column Definition

Field type:

Extension

### Column Formatting

Data type:

Numeric



No wrap

Currency

Record /  
Category:

Lines:

Date:

Line number:

Time:

Width:

400



Alignment:

Capitalize:

Sort on:

Show time zone?

Summarization format:

### Icon Setup

OP	Value	Icon

Add Edit Delete

### Display Extensions

Text Ext:

IP SCORING SYSTEM DISPLAY TEXT [34]

Parameters:

100188

Contact specific?

Image Ext:



Parameters:

100188

Display Ext:

### Filter Extensions

Filter Ext:

Parameters:

Boolean Ext:

Newly created column can be added to any patient list, including the Obstetric Grease Board

Patient Lists

Edit List ▾ | Flowsheets | MAR | Write Handoff

My Lists

- My Patients
- All My Patients
- PPH Risk

PPH Risk 3 Patients

Patient Name	MRN	PPH Risk	PPH
Him, Michelle	070008708	0.64	No
Labor, Testing	010009261	0.8	No
Obtest, Carry	070005528	0.64	No

Patient Name | MRN | PPH Risk | PPH

Him, Michelle | 070008708 | 0.64 | No

Labor, Testing | 010009261 | 0.8 | No

Obtest, Carry | 070005528 | 0.64 | No