Epic

Electronic Health Record (EHR)
Instructions for the Epic EHR System

POPULATION HEALTH INSIGHTS GUIDE TO HELP IDENTIFY PATIENTS FOR SHINGLES VACCINATION AND EVALUATE SHINGLES IMMUNIZATION RATES IN YOUR HEALTH SYSTEM

SHINGRIX (ZOSTER VACCINE RECOMBINANT, ADJUVANTED) | GSK

INDICATION

SHINGRIX is a vaccine indicated for prevention of herpes zoster (HZ) (shingles):

- in adults aged 50 years and older.
- in adults aged 18 years and older who are or will be at increased risk of HZ due to immunodeficiency or immunosuppression caused by known disease or therapy.

SHINGRIX is not indicated for prevention of primary varicella infection (chickenpox).

IMPORTANT SAFETY INFORMATION

- SHINGRIX is contraindicated in anyone with a history of a severe allergic reaction (eg, anaphylaxis) to any component of the vaccine or after a previous dose of SHINGRIX
- Review immunization history for possible vaccine sensitivity and previous vaccination-related adverse reactions. Appropriate medical treatment and supervision must be available to manage possible anaphylactic reactions following administration of SHINGRIX

Please see Indication and additional Important Safety Information for SHINGRIX on page 5 and full Prescribing Information, also available at SHINGRIXHCP.com.

CONTENTS

01. Guide Overview

This Population Health Insights Guide is intended to help health systems make configuration updates in the Epic EHR Population Health Suite (Healthy Planet) to generate reports that may identify useful insights to support improving shingles immunization rates. The guide provides suggestions and instructions to monitor and manage shingles immunization rates and associated population health metrics across the health system.

This guide will not work for other conditions, treatments, therapeutic areas, or on other EHR systems.

This guide provides specific considerations for:

- Identifying patients with shingles immunization care gaps
- Using Epic-released registries to provide visibility into immunization care gaps
- Using clinical decision support tools to create care gap awareness in the EHR for clinicians

Additionally, this guide will provide an overview of the Healthy Planet module, commonly used features of Healthy Planet, and technical instructions to configure these features across the registries, reporting tools, and health maintenance features within the Healthy Planet solution suite.

The processes outlined in this piece are variable, and not all steps will apply to every customer. Any steps or settings that are not part of a customer's standard process should be excluded or modified accordingly. Any questions should be directed to the appropriate service provider. The practice is solely responsible for implementing, testing, monitoring, and operating of any EHR tools.

This guide is designed for organizations using the Epic 2022 version or later. Some configurations may be required by a clinical analyst.

Key Terms Used in This Guide

ACIP = Advisory Committee on Immunization Practices

AIS = Adult Immunization Status

CER = rules solution in Epic

HCP = healthcare provider

HZ = herpes zoster

IC = immunocompromised

IDB = Radar (dashboard) component

IDM = Radar (dashboard) record

OPA = OurPractice Advisory

Radar = dashboard solution in Epic

YOA = years of age

02. Background

Importance of Managing Adult Immunization to Support Population Health at the Health System Level

The Epic EHR system offers functionality for health systems to manage immunizations at the system or population level by supporting a health system's existing population health strategy. After a health system sets a strategy, which can include improving immunization rates amongst vulnerable populations and standardizing immunization processes, tactics can be set at both the health system and local levels to reach these goals. Healthy Planet provides critical tools to support both the strategy and tactics.

Individual tactics—for example, creating a list of patients with immunization care gaps—can help provide valuable care and insights into what is working well at both the health system and individual provider levels. A system-wide approach is suggested to create economies of scale and reduce any outliers that may negatively affect the health system's shingles immunization efforts.

This guide provides instructions on how to help identify patients who may fall within SHINGRIX's indications. These include patients who are ≥50 YOA and adults aged 18 years and older who are or will be at increased risk of HZ due to immunodeficiency or immunosuppression caused by known disease or therapy.

The following studies supported the approval of the indications described above.

Clinical Trial Experience in Adults 50 Years and Older: The efficacy and safety of SHINGRIX in adults 50 years and older was assessed in two studies. Study 1 (NCT01165177) included adults ≥50 YOA and Study 2 (NCT01165229) included adults ≥70 YOA. These studies excluded, among others, subjects who were immunocompromised, had a history of previous HZ, were vaccinated against varicella or HZ, and patients whose survival was not expected to be at least 4 years or with conditions that might interfere with study evaluation.

Clinical Trial Experience in Immunocompromised Adults Aged 18 Years and Older: The safety of SHINGRIX was evaluated in 6 placebo-controlled clinical studies that enrolled subjects aged 18 years and older from 5 different immunodeficient or immunosuppressed (referred to as immunocompromised) populations. These populations included autologous hematopoietic stem cell transplant (auHSCT) recipients (NCT01610414 & NCT00920218), patients with hematologic malignancies who received the first dose of SHINGRIX during or within 6 months of completing immunosuppressive therapy (NCT01767467), renal transplant recipients (NCT02058589), patients with solid malignant tumors receiving chemotherapy (NCT01798056), and patients with HIV (NCT01165203).

The efficacy of SHINGRIX was evaluated in immunocompromised patients ≥18 YOA who received an auHSCT (NCT01610414) and was calculated post-hoc in another randomized, placebo-controlled, observer-blind study in subjects with hematologic malignancies (NCT01767467).

Dosing information for SHINGRIX[1]

SHINGRIX is administered as a 2-dose series according to the following schedules:

- A first dose at Month 0 followed by a second dose administered 2 to 6 months later.
- For individuals who are or will be immunodeficient or immunosuppressed and who would benefit from a shorter vaccination schedule: A first dose at Month 0 followed by a second dose administered 1 to 2 months later.

03. Indication and Important Safety Information

INDICATION

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SHINGRIX is not indicated for prevention of primary varicella infection (chickenpox).

IMPORTANT SAFETY INFORMATION

- SHINGRIX is contraindicated in anyone with a history of a severe allergic reaction (eg, anaphylaxis) to any component of the vaccine or after a previous dose of SHINGRIX
- Review immunization history for possible vaccine sensitivity and previous vaccination-related adverse reactions. Appropriate medical treatment and supervision must be available to manage possible anaphylactic reactions following administration of SHINGRIX
- In a postmarketing observational study, an increased risk of Guillain-Barré syndrome was observed during the 42 days following vaccination with SHINGRIX
- Syncope (fainting) can be associated with the administration of injectable vaccines, including SHINGRIX. Procedures should be in place to avoid falling injury and to restore cerebral perfusion following syncope
- Solicited local adverse reactions reported in individuals aged 50 years and older were pain (78%), redness (38%), and swelling (26%)
- Solicited general adverse reactions reported in individuals aged 50 years and older were myalgia (45%), fatigue (45%), headache (38%), shivering (27%), fever (21%), and gastrointestinal symptoms (17%)
- Solicited local adverse reactions reported in autologous hematopoietic stem cell transplant recipients (aged 18 to 49 and ≥50 years of age) were pain (88% and 83%), redness (30% and 35%), and swelling (21% and 18%)
- Solicited general adverse reactions reported in autologous hematopoietic stem cell transplant recipients (aged 18 to 49 and ≥50 years of age) were fatigue (64% and 54%), myalgia (58% and 52%), headache (44% and 30%), gastrointestinal symptoms (21% and 28%), shivering (31% and 25%), and fever (28% and 18%)
- The data are insufficient to establish if there is vaccine-associated risk with SHINGRIX in pregnant women
- It is not known whether SHINGRIX is excreted in human milk. Data are not available to assess the effects of SHINGRIX on the breastfed infant or on milk production/excretion
- Vaccination with SHINGRIX may not result in protection of all vaccine recipients

Please see full Prescribing Information, also available at SHINGRIXHCP.com.

SHINGRIX
(ZOSTER VACCINE RECOMBINANT, ADJUVANTED)

04. Epic EHR Healthy Planet Population Health Suite High Level Overview

Healthy Planet, Epic's population health management solution, includes:

- Comprehensive care management tools
- Advanced reporting capabilities for actionable insights
- Engagement solutions for both providers and patients
- Tools to empower patient activation
- Support for value-based care initiatives

Health systems can utilize Healthy Planet to help improve shingles immunization rates.

05. Overview of Population Health Registries & Registry Metrics Within the Healthy Planet Module

A critical component of Healthy Planet is **registries**. Registries are commonly used to drive clinical outcomes at the health system level, provide data insights, and expose clinical variation to help guide the health system to meet strategic imperatives for achieving shingles vaccination for all appropriate patients.

Registries allow health organizations to identify subsets of their patient population. Registries are organized around a common health element(s) known as **registry inclusion rules**. Common inclusion rules include age, chronic conditions, diagnoses, health measures, immunization status, or other clinical factors. Patients who meet the selected inclusion rule for a particular registry are automatically included in the registry.

Since registries are dynamic, patients who no longer meet the inclusion metric are excluded from the registry, and new patients may be introduced. This is handled by a back-end program and does not require providers to actively enroll patients in a registry.

Epic provides many commonly used health registries to health systems; the most relevant registry for immunizations in the Epic EHR system is the **Wellness Registry**. The Wellness Registry drives health maintenance alerts for all preventative measures and immunization series. However, organizations can modify registries and their inclusion rules to meet their desired specific population health programs.

It is important to note that registries can consume data feeds from outside organizations if desired. For immunizations, consider identifying if a state immunization registry is available to feed historic administered immunizations. Adding this data feed provides a complete immunization history to providers, and the immunization rules acted upon by the registry can forecast any immunization(s) due.

Defining registries and registry inclusion factors, components, and outcomes are critical elements of a population health strategy.

Registry metrics are a component used to collect data that is pertinent to the patients in the defined population registry. Once a metric is associated with a registry, reports can be created from the population subset and these metrics can be used to show the captured data to gain insight on the patient's condition.

Proposed registry metrics for shingles immunization registries and technical instructions for configuring them can be found in later sections of this guide.

06. Using Registry to Track Shingles Vaccinations at a System Level

Population health insights and registries at the health system level may offer:

- The opportunity to evaluate health system immunization rates
- The ability to help identify and monitor sites within the health system that are not achieving immunization goals
- Shingles-specific clinical decision tools, such as Health Maintenance alerts and OurPractice Advisories (OPAs), creating a standards-based approach to addressing shingles
- The ability to utilize social determinants of health to help identify barriers and help develop impactful shingles immunization efforts

As health systems provide longitudinal health care to its members, setting up immunization tactics at the system level can potentially add supplementary touchpoints with patients (expanding from primary care-based encounters to acute and other care settings).

Shingles immunization campaigns can be launched at the local level and expanded and scaled to the health system level if desired. Consider modifying the patient report and health maintenance alert scope from a local instance to the health system when scaling up.

07. Technical Instructions for Configuring Registries in Healthy Planet to Help Identify Patients Potentially Eligible for Shingles Immunization Per ACIP Recommendations

Registries are based on a general inclusion rule and may contain multiple metrics to define outcomes related to the common registry element. For immunizations, the inclusion rule is age, and multiple wellness age-based registries are available.

The Wellness Registry – All (82299) is the default Healthy Planet registry that includes all health system patients used for setting immunization expectations. Patients who meet ACIP recommendations will automatically be assigned a Health Maintenance alert in Epic when they meet the immunization criteria. To confirm that the Wellness Registry – All (82299) is active:

1. **Navigate to the Registry Editor** and **open the Wellness Registry – All (82299)**.
2. **Confirm the Registry Status is set to Active**. A back-end program automatically scans all patients for all health maintenance rules. Patients will automatically be added or removed once criteria has been satisfied.
3. **Confirm the Health Maintenance Topic** for the zoster immunizations is configured. A standard setup is available with foundation grouper records for zoster vaccines. Rule 19255 – Imm Zoster Parent Rule can be entered in the Sequential Rule field during setup.
4. **Confirm the immunizations are listed** in the grouper records and mnemonic.
5. **Complete the process** by adding the Health Maintenance Topic table of the immunization records. Navigate to Clinical Administration > Meds, Allergens, Imm, etc > Immunizations to access the immunization records.
6. **Confirm that the Epic-released Health Maintenance Plans are connected to the Health Maintenance Topics** to complete the health maintenance setup.

Please note that when not electing to use Health Maintenance alerts, manual OPAs can be created and used. This option would require manual configuration and a maintenance burden on the health system to manage all immunization recommendations and preventive health maintenance recommendations from the US Preventive Services Task Force.

08. Technical Instructions for Modifying Registry Inclusion Rules for Registries

The registry inclusion rule determines who should be part of the registry. This is usually a condition or disease, whereas age is used for the Wellness Registry.

Registry changes can be made in the Registry Editor which requires administrative credentials. The Registry Editor includes the display name, registry type, activation status, and pub status of the registry. The **Epic-released Wellness Registries are appropriate choices for age-based immunization series**. Epic-released inclusion rules and metric rules have limited editing options. Consider copying the standard rule before changing or adding properties. Registry inclusion rules are created in the Rule Editor and contained in the CER master file. In Hyperspace, look for the Registry Editor and click Override Registry to create a copy of a released registry instead of creating a new registry.

For the shingles immunization efforts, consider the Epic-released Wellness Registry – All (82299) inclusion rule and registry metrics.

NOTE: The Wellness Registry may not capture all patient vaccinations outside the health system. Therefore, it's important for HCPs to review patient immunization history and update vaccination records as appropriate.

09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic

Registry metrics provide insights into what needs to be measured for the subset of patients in the registry.

Epic-released registries come with multiple registry metrics. Metric rules can be edited, modified, or added. Registry metric CER rules work slightly differently compared to standard rules in that they not only evaluate a true or false status but also find the data point and store it in the registry data record.

To create or modify rules:

1. **Access the Rule Editor activity**.
2. **Create a new rule** or **edit an existing rule** with a registry metric context.
3. **Edit all parameters** for the rule and save the rule record.
4. **Return to the Registry Editor** and **add the new registry metric rules to the registry** in the Metrics and Rules section. Standard properties such as “Is HM Topic Due Date in Range” or “Is on Health Maintenance Modifier” may be useful properties to consider. The registry metrics used for risk indications for zoster have Epic-released metrics assigned.

09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic (continued)

For the Immunization registry metrics, consider the following Key Performance Indicators (KPIs) and related parameters. These KPIs serve as examples of reports a health system may find useful for tracking shingles immunizations. However, each health system can customize and configure KPIs based on its specific population health priorities and initiatives.

Registry Metric	KPI	Rule Parameters	Intended Improvement
Shingles Vaccination Rate ≥50 YOA	% of adults aged 50 years and older who are vaccinated against shingles	- Age: Years - Operator: >= - Value (or Property): 50	Increase the % of adults aged 50 years and older who have completed shingles vaccination*
Shingles Vaccination Rate (IC patients ≥19 YOA and <50 YOA)	% of adults 19 through 49 YOA who are or will be at increased risk of HZ due to immunodeficiency or immunosuppression caused by known disease or therapy and who are vaccinated against shingles	Option 1 - Age: Years - Operator: ≥ AND < - Value (or Property): 19-50 AND - Diagnosis: Problem List - Active Problems Only?: Yes - Operator: Equal to (=) - Value (or Property): See page 14 for examples of conditions to help identify IC patients: HIV/AIDS, Hematologic malignancy and Other immune conditions Option 2 - Age: Years - Operator: ≥ AND < - Value (or Property): 19-50 AND - Diagnosis: Problem List - Active Problems Only?: Yes - Operator: Equal to (=) - Value (or Property): See pages 14-15 for examples of conditions to help identify IC patients: Solid malignancy, Organ transplant and Rheumatologic/inflammatory) AND - Meds: Has Active Medication in Grouper - Operator: = - Value (or Property): See page 16 for examples of medications to help identify IC patients	Increase the % of IC adults 19 through 49 YOA who have completed shingles vaccination*

*2-dose series of SHINGRIX.

Please see Indication and Important Safety Information for SHINGRIX on page 5 and full Prescribing Information, also available at SHINGRIXHCP.com.

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09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic (continued)

Registry Metric	KPI	Rule Parameters	Intended Improvement
Shingles Vaccination Rate (IC patients ≥19 YOA and <50 YOA)	% of adults 19 through 49 YOA who are or will be at increased risk of HZ due to immunodeficiency or immunosuppression caused by known disease or therapy and who are vaccinated against shingles	Option 3 - Age: Years - Operator: ≥ AND < - Value (or Property): 19-49 AND - Meds: Has Active Medication in Grouper - Operator: = - Value (or Property): See page 16 for examples of medications to help identify IC patients†	Increase the % of IC adults 19 through 49 YOA who have completed shingles vaccination*
Shingles Vaccination Rate (≥50 YOA with certain comorbidities) **NOTE:** Health systems may run this metric for any single comorbidity or as a list based upon organizational preference	% of adults aged 50 years and older, with one or more certain comorbidities, who are vaccinated against shingles	- Age: Years - Operator: >= - Value (or Property): 50 AND - Diagnosis: Problem List - Active Problems Only?: Yes - Operator: Equal to (=) - Value (or Property): See page 17 for information regarding comorbidity ICD-10 codes	Increase the % of adults aged 50 years and older with one or more certain comorbidities who have completed shingles vaccination*
Adult Immunization Status (AIS) Score	Impact of the shingles immunization rate on the overall health system AIS score	Rule for the Health Measure ID for AIS-E: Adult Immunization Status: 22823 Zoster - Adult Immunization Status	Improve overall AIS score as a result of increasing the % of patients immunized for shingles
Underperforming Sites	Sites that are below the shingles vaccination goal for this health system	Rule to set the shingles vaccination goal AND SER Facility item number (Note: the rule to set the shingles vaccination goal may already exist)	Increase % of shingles vaccination for eligible patients across the underperforming site(s)

*2-dose series of SHINGRIX.

†For systemic corticosteroids, consider a parameter of >14 days of consecutive use.

09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic (continued)

Health system customers are encouraged to rely on existing Diagnosis Related Groupers (DRGs) within their EHR systems to identify specific patient populations.

For additional information, as needed, see below for a list of example diagnoses that may be associated with relevant comorbidities.

Health systems may use these example diagnoses to assist in potentially identifying the parameters for the search query.

NOTE: The conditions and therapeutic agents listed in Tables 1 and 2 are not exhaustive and only serve as an example to help identify potentially immunocompromised patients. Health system stakeholders should review and amend as they see fit to identify and manage immunocompromised patients.

The degree of altered immunocompetence in a patient should be determined by a physician.[2]

Please see the Background section of this document (section 02) for an overview of the populations included in the clinical trials involving SHINGRIX.

Table 1. Conditions and ICD-10-CM Codes Used to Identify Enrollees With Immunosuppression in MarketScan Database Study, United States, July 2012–August 2017[3]*

Condition	ICD-10 codes
HIV/AIDS†	
HIV/AIDS disease	B20-B24
Hematologic malignancy	
Lymphatic and hematopoietic tissue malignancy	C81-C83; C88-C96
Other immune conditions‡	
Disorders of immune mechanism	D89
Neutropenia	D70
Functional disorders of neutrophils	D71
Genetic anomalies of leukocytes	D72.0
Decreased leukocyte count	D72.81
Leukocyte disease NEC	D72.89
Leukocyte disease NOS	D72.9
Myelofibrosis	D75.81
Blood diseases NEC	D47.4; D75.89; D75.9; D89.2
Blood diseases NOS	D75.9; D75.89
Immunologic findings NEC	R76; R83.4-R87.4; R89.4
Nonspecific immune findings NEC and NOS	R76; R83.4-R87.4; R89.4
Solid malignancy	
Organ/system malignant tumors	C00-C07; C11-C19; C22-C80; Z85
Neuroendocrine tumors	C7A; C7B; D3A
Neoplasms of uncertain behavior	D00-D49

Table continues on next page.

09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic (continued)

Table 1. (continued) Conditions and ICD-10-CM Codes Used to Identify Enrollees With Immunosuppression in MarketScan Database Study, United States, July 2012–August 2017[3]*

Condition	ICD-10 codes
Organ transplant[§]	
Complications of transplanted organ	T86
Organ transplant status	Z94; Z98.85
Rheumatologic/inflammatory[¶]	
Sarcoidosis	D86
Amyloidosis NOS	E85
Familial Mediterranean fever	E85.0; M04
Amyloidosis NEC	E85.1; E85.3; E85.8
Multiple sclerosis	G35
Other CNS demyelination	G36; G37.1; G37.3; G37.8; G37.9
Acute infective polyneuritis	G61.0; G61.9
Acute myocarditis	I40
Polyarteritis nodosa and other	M30
Allergic alveolitis/pneumonitis NOS	T78.40; J67.9
Other alveolar pneumonopathy	J84.01; J84.02; J84.09
Enteritis and colitis	K50-K52
Lupus erythematosus	L93.0; L93.2; M32
Diffuse connective tissue disease	L94; M35.8; M35.9
Arthropathy with infection	M12.9; M01.X0; M02.10
Crystal arthropathies	M11
Rheumatoid arthritis/inflammatory polyarthropathy	M05-M14
Inflammatory spondylopathies	M46
Polymyalgia rheumatica	M31.5; M35.3

Table adapted from Patel M, Chen J, Kim S, et al. Analysis of MarketScan Data for Immunosuppressive Conditions and Hospitalizations for Acute Respiratory Illness, United States. *Emerging Infectious Diseases*. 2020;26(8):1720-1730.

*Data from a national MarketScan Commercial Claims and Medicare database study from August 1, 2012, through July 31, 2017, estimating the prevalence of immunosuppressive conditions. The study used an algorithm to identify immunosuppressive conditions based on 6 groups of diseases and 3 classes of medications.

†Excludes asymptomatic HIV code of ICD-10 (Z21).

‡Sickle cell disease, asplenia, and psoriatic arthritis were not included in the Greenberg algorithm but are considered to have immune deficiencies by Infectious Diseases Society of America guidelines. Adding these to the algorithm only increased the prevalence of immunosuppressive conditions by 0.1%.

§Bone marrow and peripheral stem cell transplant were considered under organ transplant and only considered immunosuppressed if enrollees were currently being given chemotherapeutic agents or immune modulators. Considering these enrollees under other immune conditions in which immunosuppressed does not require receipt of chemotherapeutic agents or immune modulators would increase the overall prevalence of immunosuppressed by 0.01%.

¶Psoriatic arthritis was not included in the Greenberg algorithm and could be an indication for immunosuppressive treatment. Adding this condition did not increase the prevalence of immunosuppressive conditions.

CNS, central nervous system; ICD-10-CM, International Classification of Diseases, 10th Revision, Clinical Modification; NOS, not otherwise specified; NEC, necrotizing enterocolitis.

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09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic (continued)

Table 2. Examples of Medications Used to Identify Enrollees With Immunosuppression in a MarketScan Database Study, United States[3*]

Chemotherapeutic

- Aldesleukin
- Alemtuzumab
- Arsenic trioxide
- Azacitidine
- Bendamustine hydrochloride
- Bevacizumab
- Bexarotene
- Bortezomib
- Brentuximab vedotin
- Busulfan
- Cabazitaxel
- Capecitabine
- Carboplatin
- Carfilzomib
- Carmustine
- Cetuximab
- Chlorambucil
- Cisplatin
- Cladribine
- Cyclophosphamide
- Dacarbazine
- Dactinomycin
- Dasatinib
- Decitabine
- Denileukin diftitox
- Docetaxel
- Etoposide
- Everolimus
- Floxuridine
- Fluorouracil
- Gefitinib
- Ifosfamide
- Ipilimumab
- Ixabepilone
- Lomustine
- Melphalan
- Mercaptopurine
- Mesna
- Methotrexate
- Mitomycin
- Mitotane
- Nelarabine
- Ofatumumab
- Oxaliplatin
- Paclitaxel
- Panitumumab
- Pegaspargase
- Pemetrexed
- Pentostatin
- Pertuzumab
- Pralatrexate
- Rituximab
- Romidepsin
- Temozolomide
- Thioguanine
- Thiotepa
- Trastuzumab
- Tretinoin
- Vorinostat

Immune-modulating

- Abatacept
- Adalimumab
- Alefacept
- Anakinra
- Auranofin
- Azathioprine
- Basiliximab
- Belatacept
- Belimumab
- Certolizumab pegol
- Cyclosporine
- Daclizumab
- Denosumab
- Eculizumab
- Etanercept
- Golimumab
- Infliximab
- Interferon alfacon-1
- Leflunomide
- Lenalidomide
- Mycophenolate mofetil
- Natalizumab
- Sirolimus
- Tacrolimus
- Thalidomide
- Tocilizumab
- Ustekinumab

Systemic corticosteroids†

- Dexamethasone
- Methylprednisolone
- Prednisolone
- Prednisone

Table adapted with changes from Patel M, Chen J, Kim S, et al. Analysis of MarketScan Data for Immunosuppressive Conditions and Hospitalizations for Acute Respiratory Illness, United States. *Emerg Infect Dis*. 2020;26(8):1720-1730.

*Data from a national MarketScan Commerical Claims and Medicare database study from August 1, 2012, through July 31, 2017, estimating the prevalence of immunosuppressive conditions. The study used an algorithm to identify immunosuppressive conditions based on 6 groups of diseases and 3 classes of medications.

†Corticosteroids >14 days.

NOTE: The degree to which immunosuppressive drugs cause clinically significant immunodeficiency generally is dose related and varies by drug. The degree of altered immunocompetence in a patient should be determined by a physician.[2]

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09. How to Configure Registry Metrics/Key Performance Indicators to Monitor Population Health Metrics in Epic (continued)

Health system customers are encouraged to rely on existing DRGs within their EHR systems to identify specific patient populations.

The Wellness Registry will identify patients for SHINGRIX per ACIP recommendations. In addition, you may also want to educate certain subgroups regarding their risk of shingles associated with certain chronic conditions. The following diagnosis codes may help identify those patients in your search query.

Table 3. Examples of Comorbidities That Have Been Associated with an Increased Risk of HZ[4]

Disease	ICD-10 Code/Description
COPD	J44.0 - Chronic obstructive pulmonary disease with (acute) lower respiratory infection J44.1 - Chronic obstructive pulmonary disease with (acute) exacerbation J44.9 - Chronic obstructive pulmonary disease, unspecified
Heart failure*	I50 - Heart failure
Heart disease*	I51.9 - Heart disease, unspecified
Hypertension*	I11 - Hypertensive heart disease I10 - Essential (primary) hypertension
Hyperlipidemia*	E78.0 - Pure hypercholesterolemia E78.1 - Pure hyperglyceridemia E78.2 - Mixed hyperlipidemia E78.3 - Hyperchylomicronemia E78.4 - Other hyperlipidemia E78.5 - Hyperlipidemia, unspecified
Stroke*	I63 - Cerebral infarction
Atrial fibrillation/flutter*	I48 - Atrial fibrillation and flutter
Chronic renal disease	N18 - Chronic kidney disease (CKD)
Asthma	J45 - Asthma
Diabetes	E08 - Diabetes mellitus due to an underlying condition E10 - Type 1 diabetes mellitus E11 - Type 2 diabetes mellitus

*In a meta-analysis cardiovascular conditions were associated with an increased risk of HZ. Note, the cardiovascular conditions included in each individual study assessed in the meta-analysis varied and included heart disease, heart failure, hypertension, hyperlipidemia, stroke, atrial fibrillation/flutter, and other cardiovascular disease. These conditions when assessed individually may not be associated with an increased risk of HZ. Clinical judgment should be used when assessing risk factors for HZ.

10. Key Population Health Configuration Use Cases

10.1 How to access and use the registry data/scorecards

Population health registry data can be accessed in the Epic EHR in a number of ways:

1. Reports via Reporting Workbench and SlicerDicer
2. Dashboards via Radar
3. Displayed in a patient's Storyboard

The below provides an overview and instructions for accessing each of the above-listed options.

Reports

Reporting Workbench and SlicerDicer are end-user reporting tools and can be used to access registry data. Access and permission to either reporting tool may vary but both can be can be used to review patient information. A comprehensive Patient Search List and Automated Patient Outreach resource provides full details on how to leverage both reporting solutions. All patients who meet the registry inclusion rule are included in the registries and can be included in the report. Consider the registry and the registry metric criteria to create the desired report. For example, to find all appropriate patients without a shingles immunization, use the Wellness Registry criterion and the Registry Metric count criterion for the number of shingles immunizations for the patient.

Registry-based information can be added in many reporting templates. Consider adding registry criteria (for example, the Registry Metric criterion) and display columns (for example, the Patient Registry Metric Value column) in reports. A unique Patient Registry Search report template is available in the Reporting Workbench reporting solution.

One example of a report that may be useful is the report to find All Patients Overdue for Shingles, all Patients.

Dashboards

Population Management dashboards may be available as (Radar) dashboards (IDM record), which in turn contain IDBs configured by the health system as desired. If not set up yet, minimal effort is required when looking to deploy an Epic-released registry. For immunizations, consider the 82299 – Wellness Registry – All as a dashboard option.

For shingles immunizations, consider adding IDBs. Existing Print Groups may be available. Consider for example the patient breakdown by age, immunization status, risk conditions, etc. Other dashboards are available. They may include a shingles immunization metric that is relevant for the other dashboard topic.

Storyboard option

A patient's inclusion in a registry can be included in the Storyboard. Access the Storyboard Editor and add report column 82110 – Patient Registries to the Storyboard. All registries where the patient is active will display in the Storyboard.

10. Key Population Health Configuration Use Cases (continued)

10.2 How to share population health reports and scorecards

Users can be provided access to dashboards to the population overview redirector by adding the redirector to a user record. Instructions to do so are listed below.

1. With administrative privileges, **access the User Security activity** in Admin > Access Management
2. **Navigate** to the Radar form and **add the desired ID** of the dashboard in the Additional dashboard table

Alternatively, users can copy the dashboard and add users to it using the Admin > Radar Admin > Dashboard Editor activity.

1. **Enter the name and ID** of the dashboard in the Copy field
2. **Click** Accept
3. **Add the desired users** in the Access form

Reports created in Reporting Workbench and/or SlicerDicer can be shared with other users.

For Reporting Workbench:

1. Navigate to the General tab when creating a report
2. Navigate to the Share Results section and enter the user, group, or pool to share the report with

For SlicerDicer:

1. **Click the Share button** in the menu toolbar and set the Share With field as desired
2. **Click Save and Share** to complete the process

10. Key Population Health Configuration Use Cases (continued)

10.3 How to create immunization tactics in Epic's Healthy Planet

Because Population Health touches many stakeholders in a health system, gaining buy-in from the key constituents is critical. Building a shingles immunization program requires a strategy and approved tactics.

When setting up the shingles population health program, consider the following milestones:

1. Identify all stakeholders: The population health/quality team may have extensive knowledge in setting up similar programs and have a playbook available. A clinical champion/leadership team tasked to drive immunizations across the health system can orchestrate the strategy and tactics. The EHR team may need to refine the registry inclusion rule and registry metrics and create reports and clinical decision support aligned to the strategy.
2. Creating the shingles immunization program: A timeline of milestones, objectives, and key personnel involved can set expectations for each phase of the shingles program.
3. An interface may be required to connect with the state immunization registry to provide a complete immunization history of patients.
4. Identify the target population: Given historical shingles immunization rates, what is the target rate to achieve?
5. Besides the overall shingles immunization rate, what other key performance (registry) metrics related to shingles can be defined and are meaningful?

Please see Indication and Important Safety Information for SHINGRIX on page 5 and full Prescribing Information, also available at SHINGRIXHCP.com.

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11. Disclaimers

- Conditions, ICD codes, and medications listed in this guide are only examples to help identify patients. Ultimately it is up to the HCP/health system to select the conditions, codes, and/or medications they feel put a patient at increased risk of HZ and to determine whether a patient is appropriate for SHINGRIX
- The conditions and therapeutic agents listed in Tables 1 and 2 are not exhaustive and only serve as an example to help identify potentially immunocompromised patients. Health system stakeholders should review and amend as they see fit to identify and manage immunocompromised patients. The degree of altered immunocompetence in a patient should be determined by a physician
- The customer (ie, physician, medical group, IDN) shall be solely responsible for the implementation, testing, and monitoring of the instructions to ensure proper orientation in each customer's EHR system
- Capabilities, functionality, and setup (customization) for each individual EHR system vary. GSK shall not be responsible for revising the implementation instructions it provides to any customer if the customer modifies or changes its software or the configuration of its EHR system, after such time as the implementation instructions have been initially provided by GSK
- While GSK tests its implementation instructions on multiple EHR systems, the instructions are not guaranteed to work for all available EHR systems and GSK shall have no liability thereto
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12. Notes

Please see Indication and Important Safety Information for SHINGRIX on page 5 and full Prescribing Information, also available at SHINGRIXHCP.com.

References: 1. Prescribing Information for SHINGRIX. **2.** General Best Practices for Immunization. Centers for Disease Control and Prevention. July 25, 2024. Accessed June 13, 2025. https://www.cdc.gov/vaccines/hcp/imz-best-practices/index.html **3.** Patel M, Chen J, Kim S, et al. Analysis of MarketScan data for immunosuppressive conditions and hospitalizations for acute respiratory illness, United States. *Emerg Infect Dis*. 2020;26(8):1720-1730. doi:10.3201/eid2608.191493. **4.** Marra F, Parhar K, Huang B, Vadlamudi N. Risk factors for herpes zoster infection: a meta-analysis. *Open Forum Infect Dis*. 2020;7(1):1-8.

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