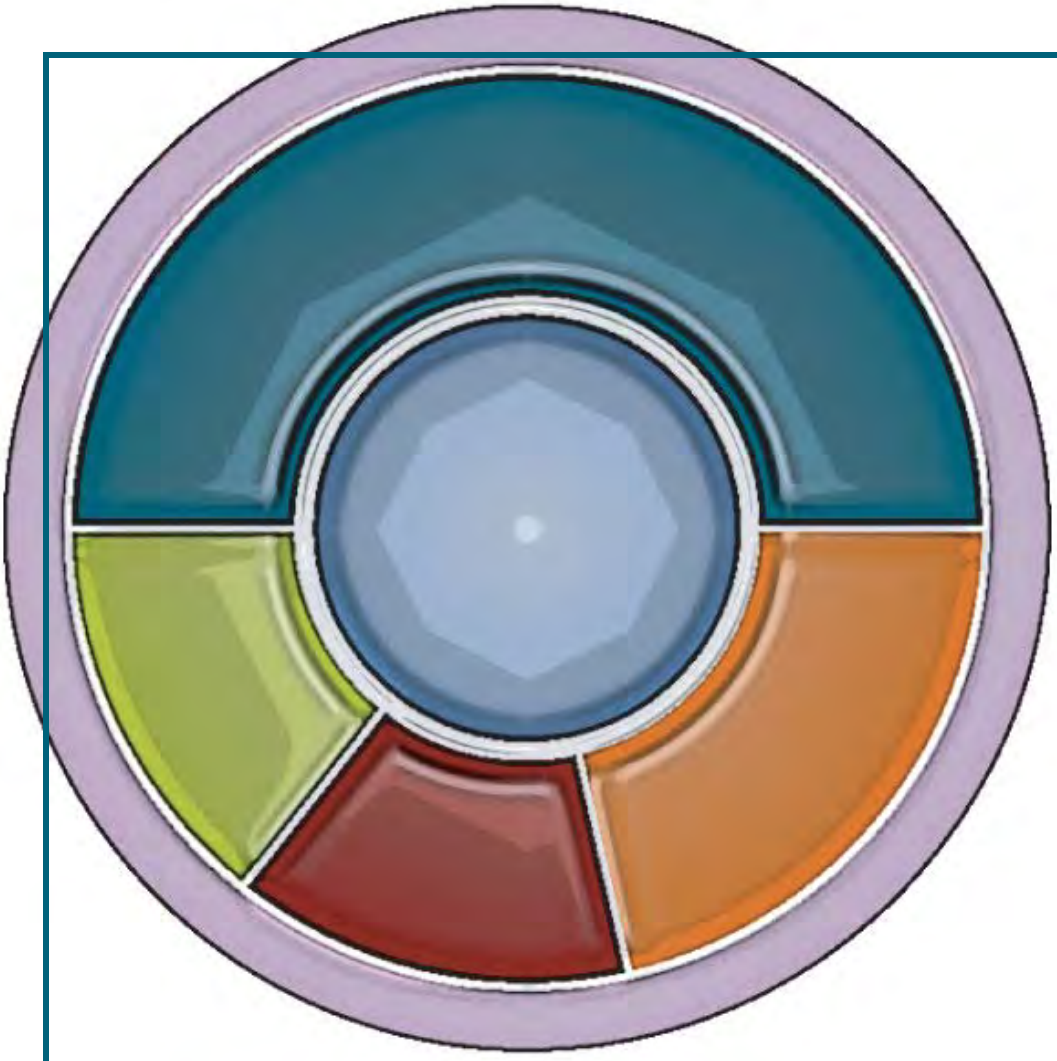


Risk Stratification:
A Study of CPC Practice Approaches

August 1, 2014

CPC
Comprehensive Primary Care

An Initiative of the Center for Medicare & Medicaid Innovation

Risk Stratification:
A Study of CPC Practice Approaches

Table of Contents

Purpose of This Guide....3

Overview of the Risk Stratification Component in Milestone 2....4

Reporting on Risk Stratification Status for PY 2014....4

What is Risk Stratification....4

Essentials of Risk Stratification....4

1. Select a process or algorithm to risk stratify your population....4

2. Risk stratification process....5

3. Review risk stratification methods and update information regularly....6

CPC Practice Approaches to Risk Stratification Methodology and Process....6

Reporting for PY 2014....6

Case Studies....7

Selecting a Risk Stratification Tool....7

Team Approach to Risk Stratification Development....8

Applying the Model for Improvement to Risk Stratification Methodology Development....11

Conclusions....14

References....15

Appendix....17

AAFP Risk Stratification Tool....17

Mercy Adult Risk Stratification Tool....20

Mercy Pediatric Risk Stratification Tool....21

St. Bernards Clopton Clinic Risk Stratification Tool....22

Village Primary Care Risk Stratification Tool....23

TMF Health Quality Institute

This material is presented by TMF Health Quality Institute under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services.

Purpose of This Guide

This Guide reflects on how CPC practices across the country have approached the risk stratification component of Milestone 2. These practice strategies represent samples of the work and are not representative of every strategy for implementing a risk stratification methodology in a practice.

CPC practices are heterogeneous in size, geography, ownership and organization; they are encouraged to innovate and test strategies derived from evidence-based and/or best practices and customize the work according to their particular needs, local dynamics and other practice aspects that may shape how they deliver care. This Guide captures the energy, innovative ideas and rigorous and determined execution of the CPC practices as they test and implement risk stratification in their practice.

We hope that you find in your colleagues' work support for continuing to explore and refine your approach to this key component of Comprehensive Primary Care.

August 1, 2014

Overview of the Risk Stratification Component in Milestone 2

Milestone 2: Population Health and Care Management for High-Risk Patients addresses population health, with a priority focus on those at highest risk for poor outcomes and preventable harm. In Program Year (PY) 2013, practices engaged in routinely assessing and assigning a health risk status to all patients through a practice-identified risk stratification methodology that applies to every empanelled patient.

For many CPC practices, this particular task marked a fundamental shift in how they examined care opportunities in targeted populations. It also sparked opportunities for practices to prioritize resources and address measurements for quality improvement, efficiencies in care delivery processes and innovative use of technology.

What is Risk Stratification

Risk stratification is the process of evaluating each empanelled patient's condition using established criteria and assigning that patient to a risk stratum. This process often requires the use of data from registries and payers. Provider input and judgment, as well as the patient's self-assessment, are crucial as well. Using algorithms, patients are assigned to a stratum based upon this information.

This key activity is the first step to planning and implementing a personalized care plan for patients most in need of care management. Stratification allows the staff to focus resources where they would have the most opportunity to prevent poor health outcomes in those patients at highest risk.

Reporting on Risk Stratification Status for PY 2014

For PY 2014, practices will work toward maintaining at least **95 percent empanelment** to provider(s) or care teams. (Reporting requirements for this work are described in the Milestone 2 section of the 2014 Implementation Guide.)

The target is to achieve **risk stratification of at least 75 percent of empanelled patients** and **provide care management to at least 80 percent** of patients identified as those at highest risk: those that are clinically unstable, in transition and/or otherwise need active, ongoing, intensive care management.

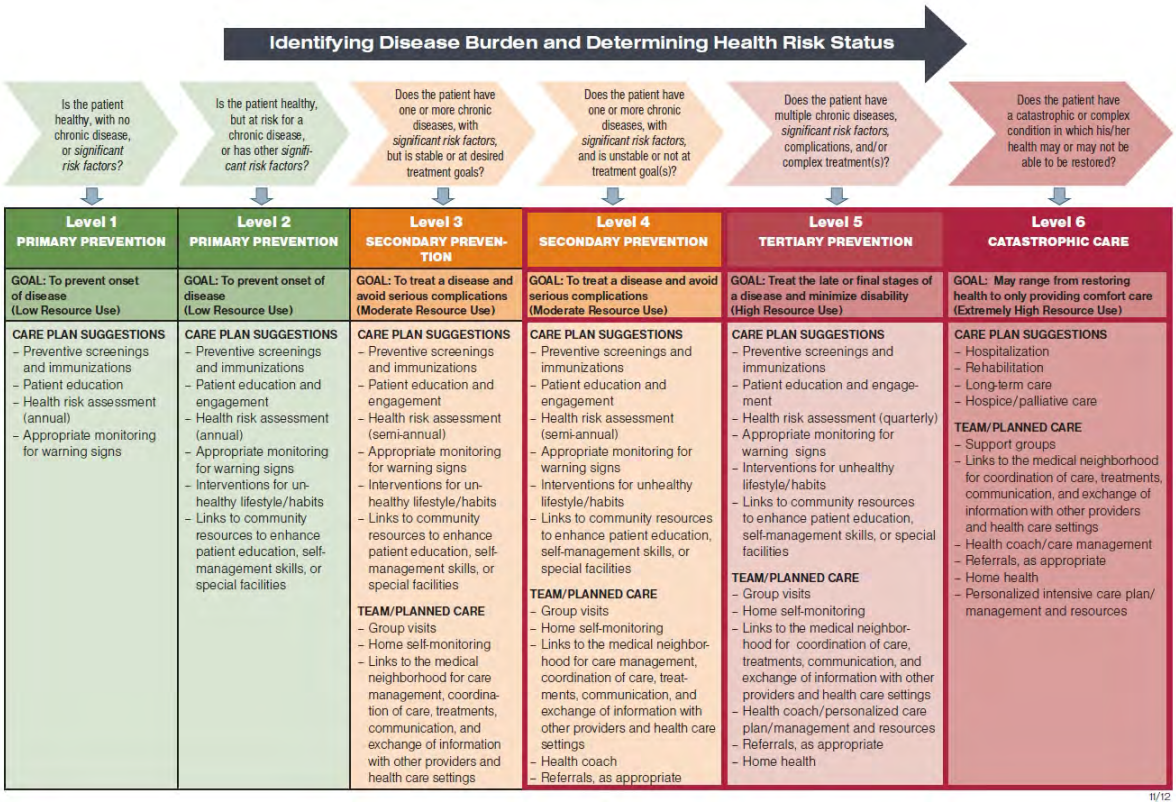
Quarterly reporting will include updating information about the practice's empanelment status, risk stratification methodology, risk stratification data and care management staffing and activities.

Essentials of Risk Stratification

1. Select a process or algorithm to risk stratify your population

The tool, or algorithm, your team selects must be simple to use and easy to understand by all involved. It must align with your care management strategy to care for the high-risk patients in your practice. The algorithm should forecast each patient's health risks, allowing for staff to prioritize resources to mitigate adverse outcomes.

The established tool will allow assigned staff to stratify each patient using a set of rules established for the purpose of assigning the patient to a risk level. A practice may have three different risk categories (low, medium and high) or have five or more. The best process is one that stratifies your patients so that resources are applied appropriately in your practice.



AAFP Algorithm for Risk Stratification

In the American Academy of Family Physicians (AAFP) algorithm above, the arrows across the top describe the criteria for placing the patient into the appropriate risk level. Once stratified to the designated level, the goal for caring for individuals in that stratum are stated, with suggestions for the plan of care.

2. Risk stratification process

To be effective and efficient, two elements must be in place for risk stratification to work: empanelment of the practice population and an EHR or registry capable of mining the data needed to stratify patients, keeping information current to facilitate reporting. Empanelment entails assigning each patient — with sensitivity to patient and family preferences — to an individual primary care provider (PCP) and a care team. Once the patient is assigned to a team, the EHR should provide the necessary patient information to assign a risk level.

Multiple criteria may be used to assist with risk stratification, but these are some of the basics:

- Patient name
- Age
- Chronic diseases
- Medication profile (look for poly-pharmacy)

Once the initial patient list is obtained, the care team adds their input based upon knowledge of the patient. This is most successfully completed with input from all members of the care team so that a more complete picture of the patient can be obtained. Social, emotional and environmental factors as well as family dynamics and cognitive ability can all inform the assigned risk level corresponding to the most

appropriate care management needs of the patient. Care management, which is addressed separately in the "Care Management: A Review of CPC Practice Approaches" guide, is typically first provided to patients in the highest risk levels.

The team must decide the best location for documenting the risk level on each patient so it is available to the entire team. It should be accessible by the front office staff as well as the caregivers. Protocols related to the risk level management and triage is important.. Appointment availability may have a different urgency for a low-risk patient than a high-risk. Medication refill is another area that may have a different management process for the high-risk patient. If patients in the high-risk category call with an issue, the provider may determine they need to be triaged rapidly by the care team. For this reason, all staff must be able to identify a patient's risk level.

3. Review risk stratification methods and update information regularly

Continually re-assessing the effectiveness of the selected risk stratification tool should be a routine task in any practice. Once patients are risk stratified, it is crucial to keep the information updated and patients re-stratified as their conditions change. Risk levels should be evaluated with every hospitalization or emergency room visit and with each visit to the practice. Annual risk stratification reviews of the patient population would help the practice stay current on care needs of the patients. Care managers play a key role in updating information for high-risk patients and working with the team on risk assignment for that population.

CPC Practice Approaches to Risk Stratification Methodology and Process

The number of risk strata among CPC practices ranged from two to seven, clear evidence that practices were modifying models to best fit the practice's needs, population, EHR and other factors. Various risk stratification tools are available to practices (*see appendix for examples from CPC practices*). They vary in complexity, ranging from a simple checklist to an elaborate grid with scaled values for risk factors. Some tools integrate more easily than others into particular EHRs. The key consideration in selecting a risk stratification approach is to find one that best fits the practice's patient population, works with the practice EHR, and can fit into the practice workflow.

Practices' approaches to identifying risk factors — ranging from poly-pharmacy use to severity of specific diseases such as hypertension or cancer — varied widely. By reviewing EHR-generated patient/diagnoses lists, some practices identified these risk factor categories after reflecting on patterns of disease and severity in their empanelled population. Others included the clinical care team's knowledge of the patient, and many practices incorporated one or more social determinants of health.

Practices with more experience in population health incorporated data outside of the practice such as labs and hospital utilization. These practices also chose more sophisticated methods to calculate a risk score for each patient, such as programming the EHR to auto-generate a risk score as the clinician updated the medical record.

Reporting for PY 2014

Practice-based empanelment, risk stratification and care management will remain an essential part of CPC throughout the initiative. While practices will work toward achieving **risk stratification of 75 percent of**

empanelled patients, the care management target is to **provide care management to at least 80 percent of patients identified as those at highest risk** (those that are clinically unstable, in transition and/or otherwise need active, ongoing, intensive care management). Quarterly reporting will include updating information about your practice's risk stratification methodology, empanelment status, risk stratification data and care management staffing and activities. (Complete reporting requirements for this work are described on page 13 of the 2014 Implementation Guide.)

Case Studies

Risk stratification is not a "one size fits all." In the following case studies, CPC practices describe how they identified, designed, tested and implemented a risk stratification process to best suit their patient population. These processes included further refining each stratum to achieve an optimal stratification and conducting multiple iterations of a Plan-Do-Study-Act (PDSA) cycle. The concepts from the Model for Improvement and PDSA are applied to describing the last practice approach in these case studies.

Selecting a Risk Stratification Tool

Village Primary Care, Hoosick Falls, New York
Independent; 2 physicians, 1 ANP; 4,689 patients

This rural practice chose to use a risk stratification tool loosely based on the Minnesota Tiering Model, which stratifies patients primarily by the number of chronic condition categories or conditions the patients currently deal with that last longer than six months.

Village Primary Care further modified the tool to include hospital utilization and social factors such as if the patient has a serious and persistent mental illness, was hospitalized in the last 12 months or has been to the emergency room twice in the last 12 months. Conditions meeting any of these hospital utilization and social factors are added to the "category" counts for the purpose of the risk stratification tool. All conditions are tallied together. The total number of conditions determines the patient's risk score, which ranges from 1 (lowest risk) to 5 (highest risk).

Chronic Count	Tier
0	1
1-3	2
4-6	3
7-9	4
10 or more	5

Example of strata by chronic count

When the practice began the task of risk stratifying its entire empanelled patient population, they started with patients seen in the last three years. Initially, risk scores were assigned through a chart review of all active patients over an eight-month period. This allowed the practice to stratify 99 percent of its patient population.

Although the risk assessment is calculated on paper, the tool is scanned and loaded into Allscripts for easier tracking. A discrete data field is located in the patient's Risk Tier Flow Sheet within the EHR, which allows the practice to track the patient's movement across risk tiers over time. The Risk Tier Flow Sheet even tracks when the physician updates the risk score that an MA or nurse may have initially assessed.

Village Primary Care strives to maintain risk stratification for 99 percent of the empanelled patient population. To do this, maintenance reports are run quarterly using the analytics package that is an add-on to Allscripts. The reports show how many patients are in each risk strata and flag those who need to be risk stratified. The care manager reviews all the "4s" and "5s" for a closer look at risks and to assign subsequent interventions as needed. Particular attention is paid to the last visit date of the patients in these higher risk strata to ensure they are routinely and appropriately followed by their physician.

Team Approach to Risk Stratification Development

Family Physicians of Greeley, Colorado

Independent; 23 physicians, 2 PAs; 10,041 patients

This practice uses a four-stratum risk stratification model that was modified to achieve 100 percent risk stratification of its patients in one work day. By selecting a risk stratification methodology that aligns with their care management resources, practices can identify those patients who need advanced strategies and resources and thus benefit the most from care management.

Family Physicians of Greeley researched several established risk stratification methods in use by systems across the U.S., including Geisinger and the Washington University (Missouri) model. Knowing that preventing the conditions that lead to admissions and increasing costs should factor into the practice's risk assessment strategy, the team also researched AHRQ and hospital costs to identify key potentially preventable conditions. The practice's quality and systems manager brought these models to the quality improvement team, where the team identified similarities and considered characteristics in the practice's patient population to develop a hybrid of these two models to implement across its three practice sites.

Once the team determined a scoring method, the practice tested the model against a small subset of patients to evaluate if the scoring algorithm captured the "right" patients. The practice found the model worked satisfactorily. The quality and systems manager then built a custom report within its EHR (NextGen) to automate the process. The crystal report pulls the key risk data from discrete data fields within each patient's chart to calculate a risk score. Using this automated process, the practice was able to complete the first step in their risk stratification process for 100 percent of patients in *less than a day*.

The final step of the process was a physician review. The quality and systems manager provided each physician with a report of his or her empanelled patients. Physicians reviewed the reports, moving their patients across risk stratum as they saw appropriate based on their clinical judgment. A follow-up correlation analysis compared each physician's mean risk score with the physician's number of patients admitted in the last year. The analysis revealed a strongly associated relationship and further validated the risk stratification tool's effectiveness for this practice's patient population.

The practice assigned a risk score to the patients based on the sum of the points assigned to the criteria that they meet. A higher score means higher risk. The practice assigned the following risk tiers based on risk score:

- low risk (0–1)
- medium risk (2–3)
- high risk (4–8)
- highest risk (9+)

The patient's risk score is documented in the EHR as a dummy diagnosis code (e.g., RiskLow, RiskMod, RiskHigh and RiskTop).

A patient's risk score can be calculated in real-time as the team encounters the patient's medical record. It is also re-calculated for all patients every six months to identify new highest risk patients for proactive care management. To help track patients' status that may have changed between appointments, a re-stratification report is triggered when a hospitalization or visit to the emergency department is recorded.

Criteria	Points
Diabetes	2
DM HgbA1c > 9	2
Hypertension	1
BP > 140/90	1
Systolic BP > 180	2
Congestive Heart Failure	2
COPD	2
Dialysis	4
Fracture/osteoporosis, age 50+	2
CAD/AMI	1
Depression/bipolar	1
Intellectual disability	1
Current smoker	1
BMI > 30	1
LDL > 100	1
Age 75+	1
6+ prescription medications	1
2+ specialist referrals	1

Family Physicians' point assignment for various chronic conditions

In addition, patients with a hospital admission are automatically considered highest risk, except for those in chemotherapy, long-term SNF patients, hospice patients and pediatric and obstetric patients who are included with hospitalization criteria but may be lower risk because, although they are closely managed by their specialist, additional primary care oversight is given for other health concerns they may have.

Mercy Family Medicine Clinics, Durango, Colorado (three locations)
Independent (rural); 7 physicians, 7 ANPs/PAs; 9,344 patients

Clinical staff at **Mercy Family Medicine Clinics** in Durango, Colorado, started building its risk stratification method by looking at the AAFP risk stratification tool, which has six levels: Level 1 — lowest risk, Level 2 — low risk, Level 3 — moderate risk, Level 4 — moderately high risk, Level 5 — high risk and Level 6 — catastrophic risk. They also reviewed various tools from the California Quality Collaborative as well as Telluride Medical Center in Colorado. Using these as a model, they created their own risk stratification tools.

All patients are assigned a risk score using an Adult Risk Stratification Tool or a Pediatric Risk Stratification Tool. The team evaluates the risk level of each scheduled patient during the team huddle at the beginning of the day. This is completed by record review, provider input and information obtained at the time of the patient visit. Initially it took varying times to risk stratify each patient, based on the comfort of the

individual staff member. Some nurses could work ahead, others needed to develop a comfort level with the process. Currently it takes about three minutes per patient to risk stratify.

The practices use each provider's daily appointment schedule to analyze the medical record and assign patients a risk level. The care team (provider, nurse and MA) seeing the patient that day are jointly responsible for completing this task. The nurse/MA submits completed risk stratification tools to business support to enter on a spreadsheet. For all patients who are Level 6, the tool is copied and given to the RN Care Coordinator responsible for care management. The spreadsheet lists the patient name, provider, risk level and date of evaluation and allows the team to keep track of who has been assessed. The spreadsheets are analyzed quarterly by the providers to assess for accuracy. The stratification sheet is then scanned into the patients' encounter in the EHR, LSS Data Systems. It is located under "other records" and labeled with the patient's score for easy accessibility.

Proposed Workflow Steps:

1. Analyze each patient on provider's daily schedule and obtain risk level
2. All patients assigned a risk level
3. Nurse/MA place all completed risk stratification tools at the front desk
4. Business support enters risk stratification tools into spreadsheet
5. Risk stratification tool scanned into chart under "other records" and a chart note is labeled "Risk Strat Adult or Peds, Level X" to refer to easily

The risk stratification process was difficult in the onset, but it eased over time. Some nurses were quickly proficient with the new tasks and were able to complete assessments several days in advance of appointments. Initially only about 1 percent of patients were stratified to the extremely high risk level (Level 6) and about 15 percent scored at the high risk level (Level 5). The team then refined the tool by adding a "Chronic Disease Qualifier" and a "Mental and Behavioral Health Qualifier" to ensure additional points were scored for patients with highly complicated illnesses. Furthermore, they added "Significant Life Stressors" to the Mental and Behavioral Health assessment categories to better differentiate higher risk patients. The practice also lowered the threshold for high-risk and extremely high-risk scores by one point. With these refinements, the current risk stratification tool is 95 percent stable. Few changes, if any, need to be made, but the team continues to evaluate.

Baptist Health Family Clinic, Bryant, Arkansas
Independent; 3 physicians, 1 NP; 5,066 patients

Baptist Health Family Clinic in Bryant, Arkansas, is a four-provider clinic consisting of three physicians and a nurse practitioner. Similar to other CPC Practices, Baptist Health decided to use the six-category AAFP risk stratification guidelines and selected risk levels based on the number of chronic conditions, risk factors, recent hospitalizations, age and cognitive function. No modification of the AAFP tool was needed; it has been found to be effective in its original format. Initially as patients presented for an office visit, the providers assigned a risk score, with input from other clinical staff. Then they then document the risk level in the EHR. The patients are risk stratified based on their *current* health status. Each patient is re-assessed for risk at each visit. Risk levels change often as patients' health conditions become more or less controlled. Helping to fill in any blanks, the care managers review schedules daily to ensure their patients are

stratified. In addition, reports are run on those patients who have not been risk stratified. The care coordinators then risk stratify them using information in their medical record, and they contact the patient to set up an appointment if they are due for a visit.

Initially, all clinical staff members were trained to use the risk stratification tool during their monthly staff meeting. Initial education included how to use it, how often to stratify and specifics of each risk level. This education was presented by the care coordinators and providers, and training took less than an hour because the tool is user friendly. The tool is posted at each workstation throughout the clinic. Each new clinical employee in the practice is given an overview on risk stratification by the care coordinators, the physician they work with and the software support team. Software Support helps with documentation training in the EMR (NextGen). No changes have been made to the tool since implementation so no additional training has been necessary. The practice has risk stratified more than 88 percent of the patient population.

In June 2013 the clinic built a risk stratification radio button into the EHR (NextGen), which now allows them to complete the patient's risk status directly in the EHR. This modification allows accurate and efficient tracking and reporting of the practice's risk stratification status.

At Baptist Health, care management begins for patients at Level 3 risk status (moderately high risk). Providing care management to patients at moderately high risk allows for preventive interventions as well as a significant opportunity for intensive care management for the highest risk patients.

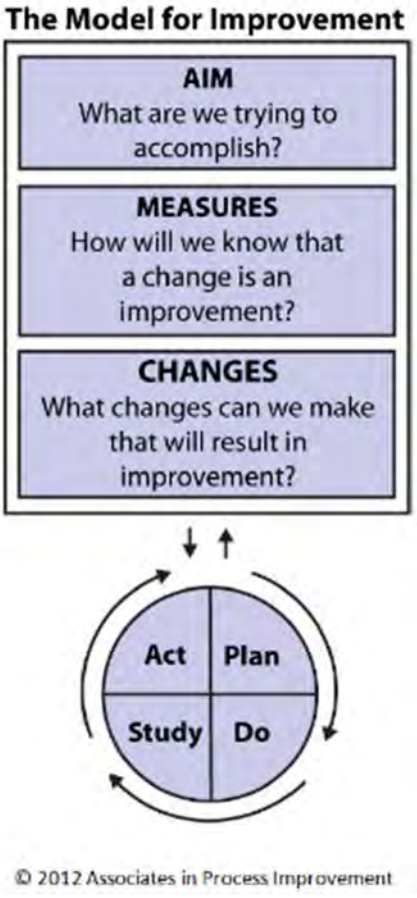
Applying the Model for Improvement to Risk Stratification Methodology Development

St. Bernards Clopton Clinic, Jonesboro, Arkansas
Affiliated with system; 9 physicians, 4 ANPs; 7,500 patients

Realizing that risk stratification tools range from simple to very complex, **St. Bernards Clopton Clinic's** leadership and clinical team implemented a risk stratification methodology after conducting several Plan-Do-Study-Act (PDSA) rapid improvement cycles to test, refine and create the most effective tool for their clinic's patient population.

Formed a Team and Determined the Aim: Including the right people when making a complex change is critical to success. St. Bernards Clopton Clinic risk stratification development team, led by its care managers, encompasses one physician, the IT director and a nursing administrator. The team aimed to improve its risk stratification methodology by researching and evaluating best practices to make recommendations that would support the clinic's population health goals and adequately distinguish the practice's high-risk patients. The team completed this task by conducting an in-depth evaluation of various tools for patient risk stratification available online and by interviewing other facilities currently doing risk stratification. The team also attended an in-person CPC learning session that addressed risk stratification methodology development.

Established Measures: The practice's outcome measure of success for this aim was the rate at which the staff's use of the tool to assess and distinguish the practice's high-risk patients matched the provider's assessment using the same tool.



Identified The Change: The inclusion criteria used to determine which risk stratification methodology might meet the practices' needs included several disease conditions, hospital admissions and ED visits. The following were some of the initial criteria applied to determine the risk status for all active patients (seen in the past two years):

- A diagnosis of hypertension, diabetes, heart failure, chronic kidney disease and/or chronic obstructive pulmonary disease
- Two or more hospital admissions in the past year
- Two or more ED visits in the past six months
- Dual eligibility with Medicare/Medicaid

At first the team considered the following risk strata levels based on the inclusion criteria:

- High Risk (3 or more)
- Moderate Risk (2)
- Low Risk (less than 2)

However, it did not take long for the risk stratification team to realize that this three-level strata was too narrow and lacked ability to differentiate sufficiently among the higher risk patients, thus too many patients received a high-risk score. They determined that the risk stratification methodology needed more flexibility in distinguishing which high-risk patients had needs best met by the practice's care management resources.

The team eventually landed on a point-based risk stratification system adapted from the AAFP model and a Risk Stratification tool presented at an Arkansas CPC learning session. The practice developed the points for the risk strata based on the providers' knowledge of the medical needs of their patients. They predicted that this tool would provide the practice with the numeric classification needed to risk stratify the patients using the following risk levels:

- Low Risk (0-6)
- Moderate Risk (7-12)
- Moderate-High Risk (13-15)
- High Risk (16 and above)

Tested the Change

Plan: Having developed the risk stratification method, the team planned to test the tool on two physicians' patient panels. Patients were risk stratified during a pre-visit review of the patient's medical record by both. The plan included the providers using the tool to complete the process independent of the care managers. The providers also considered in their assessment their knowledge of the patient, the cost of their care, resources needed and patient's behavioral aspects. The objective of the test was to validate the usefulness of the tool as well as its effectiveness in producing the same independent results between the care management staff and the providers.

Do: The team carried out the test of the new risk stratification methodology as planned. They used the tool with two physicians' patient populations over a two-week period and recorded their observations, noting problems as they arose.

Study: The team analyzed the outcome of the test and determined that the tool was effective in assigning risk levels to the patients. However, they realized that as patients' risk levels are determined, some patients' scores did not match their care management needs. The providers also identified a few gaps in disease conditions and advised including additional disease types in the tool.

Act: The care managers adjusted the tool to incorporate the providers' suggestions. They also decided that when they identify a patient straddling two risk categories, the care manager would have the responsibility of contacting the patient's provider for additional input before assigning the risk score. With these refinements, the team planned to re-stratify the same patients using the adjusted tool and process for the next iteration of the PDSA cycle. The initial PDSA cycle took approximately six weeks.

The result from this series of small-scale tests of change using PDSA cycles was a redesigned risk stratification tool and process deemed as an adequate measure of risk for the practice's patient population.

Implemented the Change: At St. Bernard's Clopton Clinic, developing the risk stratification tool took about two months, and once they decided to apply the methodology to the entire practice, training the staff took an additional four to five months. The final process follows these steps:

- A staff member (often the radiology technician) reviews the provider's daily schedule and applies the risk stratification tool during manual review of each patient's record.
- The same staff member obtains the utilization information about hospital admissions and emergency room visits since the patient's last visit, using the practice's link to the hospital's records.
- Once these steps are completed, the staff member enters the risk status information into the patient's EHR (Allscripts Enterprise) using an order field. The strata are in descriptive and numerical form. The order is stated in the descriptive form, and the score is then entered into the order. This allows a descriptive or numerical search in the EHR.
    - Providers may further assess and place a patient into a different strata based upon their knowledge of the patient. In this case, the numerical score remains the same, but the descriptive strata changes. An example is a patient whose numerical score remains 17, but the order is entered as moderate-high risk.

    - The care manager can query patients by numerical range. This enhances their ability readily focus on a specific risk group.
- A comment may be added to the patient comment field to expand on why a patient was placed within a certain strata.

Once the staff completes the risk stratification process, the care managers can run a report through the EHR to create a list of high-risk patients to ensure application of care management resources as necessary.

Maintenance: The care managers and providers regularly adjust the risk level for individual patients. Although the staff re-stratified patients at any given time based on an event (such as new diagnosis or repeated ER or hospital admissions), regular reviews are completed based upon the following schedule:

- High Risk – every three months
- Moderate-High Risk – every four months
- Medium Risk – every six months
- Low Risk – every year

The practice's goal is to have care plans on all patients who are high risk. They may also create care plans for patients in a lower risk level as a strategy to proactively manage and prevent patients from moving into a high-risk category.

The team also updated the Risk Stratification tool this year to include socio-economic factors (homebound, live alone, social support and lack of insurance) as well as the mental health diagnoses of schizophrenia and bipolar disorder. This increases the tool's sensitivity to the patient's total needs.

Conclusions

With a target for PY 2014 to achieve **risk stratification of at least 75 percent of empanelled patients**, this guide provided insight into the strategies CPC practices used to accomplish this goal. Adoption of risk stratification methodologies that prioritize provider and care team knowledge and insights about the patients was high among CPC practices in PY 2013. In PY 2014, we anticipate continual refinement in the risk stratification tools and methods used by CPC practice to evaluate all empanelled patients to provide apply care management resources to those at highest risk for poor health outcomes.

References

AAFP Risk-Stratified Care Management
This web page explains what risk-stratified care management is, in that it begins with a periodic and systematic assessment of each patient's health risk status, using criteria from multiple sources to develop a personalized care plan.

AAFP Risk-Stratified Care Management and Coordination Table (1-page PDF)
This table shows examples of potentially significant risk factors as well as risk categories and levels. It provides guidance to identifying disease burden and determining health risk status.

Advancing Integrated Mental Health Solutions (AIMS)
The AIMS Center, housed within the University of Washington's Division of Integrated Care & Public Health, Department of Psychiatry and Behavioral Sciences, seeks to improve the health and mental health of populations through patient-centered, integrated mental health services for individuals across the age span. The site provides information on integrated mental health care including principles and tasks for integrating care.

Assessment of Risk Stratification Methods Identifying Patients for Care Coordination within a Medical Home (27-page PDF)
This Mayo Clinic presentation at the Academy Health Conference in June 2012 focuses on identifying patients with care coordination needs who are part of a Medical Home.

Care Management in CPC: Definition
Care management is a tailored primary care function. In CPC, specific dynamics of the initiative will shape how and when your practice initiates this care. The definition provided on the Collaboration site describes how care management supports the drivers for comprehensive primary care.

Care Management of High-Risk Patients by WR Clinic for Senior Health
This resource is provided by Washington Regional Clinic for Senior Health as their approach to Milestone 2: Care Management of High-Risk Patients. Attached is a description of their approach, their care management workflow and their definitions of their risk.

CPC Practice Spotlight – SAMA Healthcare, Dec. 6, 2013 (2-page PDF)
SAMA Healthcare Services in Arkansas describes the practice's approach to risk stratification.

Haas, Lindsey R. Assessment of Risk Stratification Methods: Identifying Patients for Care Coordination within a Medical Home. Presented at Academy Health Conference, June 26, 2012

NIHCR High Intensity Primary Care
The National Institute for Health Care Reform offers this article outlining approaches and models for "high-intensity primary care," which could prevent costly emergency department visits and hospitalizations. High intensity primary care could be offered to a handful of patients with complex or multiple chronic conditions such as diabetes, congestive heart failure, obesity and depression.

An Overview of Risk Stratification and Care Management, CPC National Learning Community, Feb. 27, 2013 (59-page PDF)
Outlines the basics of risk stratification and how to underpins successful care management.

PCPCC: Successful Examples of Integrated Models
The Patient-Centered Primary Care Collaborative presents successful examples of integrated models of care in primary care from around the world, including links to project websites.

Project BOOST Team. The Society of Hospital Medicine Care Transitions Implementation Guide: Project BOOST: **B**etter **O**utcomes by **O**ptimizing **S**afe **T**ransitions. Society of Hospital Medicine website, Care Transitions Quality Improvement Resource Room http://www.hospitalmedicine.org Accessed Aug. 1, 2012.

Randall S. Brown, Deborah Peikes, Greg Peterson, Jennifer Schore and Carol M. Razafindrakoto. Six Features of Medicare Coordinated Care Demonstration Programs That Cut Hospital Admissions of High-Risk Patients. *Health Affairs*, 31, no.6 (2012):1156-1166

Risk Stratification Process (2-page PDF)
Risk stratification method using four levels which correspond to primary, secondary and tertiary prevention as Levels 1, 2 and 3. The 4th level is the patient who is a vastly complicated and high-risk individual.

Risk Stratification Webinars

Care Plans, New Jersey Learning Session, Nov. 6, 2013 (17-page PDF)
Learn to design workflows with a focus on care plans; navigate workflow issues within the process.

Risk Stratification, National webinar, April 9, 2014 (38-page PDF)
This presentation describes progress to date from CPC practices as well as showcases success stories from the field. Discussion includes work flow considerations, care management strategies and measures of success.

Risk Stratification, Ohio Learning Session, Jan. 22, 2013 (40-page PDF)
A review of risk stratification, a care management overview and practice stories.

Risk-Stratified Care Management, ARK/OK Learning Session, Dec. 21, 2012
This presentation provides steps toward starting a risk stratification care management plan as well as what to avoid. Comprehensive notes for this session are provided here as well.

PDSA Your Risk Stratification Methodology, Arkansas Regional Webinar, Feb. 7, 2014
This presentation includes an overview of a risk stratification tool followed by a discussion of tools from three different practice sites.

Appendix

AAFP Risk Stratification Tool (available at [AAFP Risk Stratification Tool])

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Risk-Stratified Care Management and Coordination

Table 1: Examples of Potentially Significant Risk Factors

Clinical Diagnoses, Behavioral Health, Special Needs	Potential Physical Limitations	Social Determinants	Utilization/Claims Data	Clinician Input (Personal Knowledge)
- Any chronic disease, particularly one that is not in control or at desired goal - Chronic pain - Substance abuse (alcohol/drug/tobacco) - Terminal illness - Advanced age with frailty - Multiple co-morbidities - Pre-term delivery of newborn - Child, youth, or adult with special needs - Anxiety, schizophrenia, bipolar, depression, or other behavior affecting health - Dental health - Dementia/Alzheimer's disease	- Non-ambulatory - Needs Assistance with Activities of Daily Living (ADLs) - Severely diminished functional status - Declining eyesight - Extreme weakness or fatigue - At risk for falls	- Lack of financial or family support that impacts care - Unemployed - No health insurance - Low health literacy - Unsafe home environment - Homeless - Lives alone and needs assistance with ADLs - Transportation for health care appointments is difficult - Language barriers	- Frequent hospitalizations (particularly heart failure, GI disorders, and pneumonia) - Frequent office, ER, or urgent care visits - Multiple providers - Hospital readmission within 30 days - Major procedure in last year - Chronic kidney disease - Brain trauma - Expensive medications	- Polypharmacy – Patient is taking several medications that may not all be needed and/or could have potential for interactions - High-risk medications - Non-compliant with treatment plan - Confusion with medications or following the treatment plan - Recent move to long-term facility or other transition of care - Spouse (who was the caregiver) recently deceased - Lack of engagement in care plan - Low confidence or ability for self-management - Answer to the question: Is this patient at higher risk for dying within the next year?

Table 2: Risk Categories and Levels using Diabetes Example Case

CATEGORY	PRIMARY PREVENTION (Low Resource Use) GOAL: To prevent onset of disease		SECONDARY PREVENTION (Moderate Resource Use) GOAL: To treat a disease and avoid serious complications		TERTIARY (High Resource Use) GOAL: To treat the late or final stages of a disease and minimize disability	CATASTROPHIC/COMPLEX (Extremely High Resource Use) GOAL: May range from restoring health to only providing comfort care
Stage	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
	No known diagnoses or complex treatments	No known diagnoses but demonstrates warning signs or potentially significant risk factors	Has diagnosis, but stabilized or in control; potentially significant risk factors	Has diagnosis and/or complex treatment, and at higher risk for complications or potentially significant risk factors	Has diagnosis, complex treatment, and complications or potentially significant risk factors - goal is to prevent further complications	• Very severe illness or condition and potentially significant risk factors • End-of-life care • Premature baby (May have high costs with limited or no opportunity for improvement, stabilization, or cost control)
Example of using uncontrolled progression of diabetes	• Healthy	• Blood glucose and lipids rising, but still within desired parameters • BMI elevated • Smoker	• Diagnosed with type 2 diabetes, blood sugar, and lipids brought within desired parameters • Married, family involved	• Blood sugar and lipids not within desired parameters, and financial situation impacting negatively • Lives alone • One ER visit and one hospitalization in past year	• Has diabetes with early renal disease, coronary artery disease, failing eyesight, and lives alone • Three ER visits and two hospitalizations in past year • Dual eligible Medicaid/Medicare • Needs Assistance with Activities of Daily Living (ADLs)	• Diagnosed with lung cancer • Recent myocardial infarction • Progression to ESRD with renal dialysis • Amputation of one leg • Blind • Lives in nursing home
Example of Care Plan Considerations for patient with uncontrolled progression of diabetes	✓ Preventive screenings and immunizations ✓ Patient education and engagement ✓ Appropriate monitoring for warning signs ✓ Health risk assessment (annual) ✓ Care plan that includes smoking cessation counseling and program offered		✓ Preventive screenings and immunizations ✓ Patient education and engagement ✓ Appropriate monitoring ✓ Health risk assessment (semi-annual) ✓ Care plan with smoking cessation counseling and program offered ✓ Team/planned care ✓ Group visits ✓ Health coach ✓ Referrals as appropriate, such as social services ✓ Community resources ✓ Home self-monitoring		✓ Preventive screenings and immunizations ✓ Patient education and engagement ✓ Appropriate monitoring ✓ Health risk assessment (quarterly) ✓ Intensive care management plan and resources ✓ Smoking cessation ✓ Group visits ✓ Health coach ✓ Home health	✓ Hospitalization ✓ Rehabilitation ✓ Long-term care ✓ Hospice ✓ Home health ✓ Individualized intensive care management and coordination ✓ May or may not conduct preventive screenings ✓ Health risk assessment, as appropriate

Identifying Disease Burden and Determining Health Risk Status

Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Is the patient healthy, with no chronic disease, or *significant risk factors?*	Is the patient healthy, but at risk for a chronic disease, or has other *significant risk factors?*	Does the patient have one or more chronic diseases, with *significant risk factors*, but is stable or at desired treatment goals?	Does the patient have one or more chronic diseases, with *significant risk factors*, and is unstable or not at treatment goal(s)?	Does the patient have multiple chronic diseases, *significant risk factors*, complications, and/or complex treatment(s)?	Does the patient have a catastrophic or complex condition in which his/her health may or may not be able to be restored?
PRIMARY PREVENTION	**PRIMARY PREVENTION**	**SECONDARY PREVENTION**	**SECONDARY PREVENTION**	**TERTIARY PREVENTION**	**CATASTROPHIC CARE**
GOAL: To prevent onset of disease (Low Resource Use)	**GOAL: To prevent onset of disease (Low Resource Use)**	**GOAL: To treat a disease and avoid serious complications (Moderate Resource Use)**	**GOAL: To treat a disease and avoid serious complications (Moderate Resource Use)**	**GOAL: Treat the late or final stages of a disease and minimize disability (High Resource Use)**	**GOAL: May range from restoring health to only providing comfort care (Extremely High Resource Use)**
CARE PLAN SUGGESTIONS - Preventive screenings and immunizations - Patient education - Health risk assessment (annual) - Appropriate monitoring for warning signs	**CARE PLAN SUGGESTIONS** - Preventive screenings and immunizations - Patient education and engagement - Health risk assessment (annual) - Appropriate monitoring for warning signs - Interventions for unhealthy lifestyle/habits - Links to community resources to enhance patient education, self-management skills, or special facilities	**CARE PLAN SUGGESTIONS** - Preventive screenings and immunizations - Patient education and engagement - Health risk assessment (semi-annual) - Appropriate monitoring for warning signs - Interventions for unhealthy lifestyle/habits - Links to community resources to enhance patient education, self-management skills, or special facilities **TEAM/PLANNED CARE** - Group visits - Home self-monitoring - Links to the medical neighborhood for care management, coordination of care, treatments, communication, and exchange of information with other providers and health care settings	**CARE PLAN SUGGESTIONS** - Preventive screenings and immunizations - Patient education and engagement - Health risk assessment (semi-annual) - Appropriate monitoring for warning signs - Interventions for unhealthy lifestyle/habits - Links to community resources to enhance patient education, self-management skills, or special facilities **TEAM/PLANNED CARE** - Group visits - Home self-monitoring - Links to the medical neighborhood for care management, coordination of care, treatments, communication, and exchange of information with other providers and health care settings - Health coach - Referrals, as appropriate	**CARE PLAN SUGGESTIONS** - Preventive screenings and immunizations - Patient education and engagement - Health risk assessment (quarterly) - Appropriate monitoring for warning signs - Interventions for unhealthy lifestyle/habits - Links to community resources to enhance patient education, self-management skills, or special facilities **TEAM/PLANNED CARE** - Group visits - Home self-monitoring - Links to the medical neighborhood for coordination of care, treatments, communication, and exchange of information with other providers and health care settings - Health coach/personalized care plan/management and resources - Referrals, as appropriate - Home health	**CARE PLAN SUGGESTIONS** - Hospitalization - Rehabilitation - Long-term care - Hospice/palliative care **TEAM/PLANNED CARE** - Support groups - Links to the medical neighborhood for coordination of care, treatments, communication, and exchange of information with other providers and health care settings - Health coach/care management - Referrals, as appropriate - Home health - Personalized intensive care plan/management and resources

Mercy Adult Risk Stratification Tool

Mercy Adult Risk Stratification Tool								19 YEARS AND OLDER
Risk Level:		Evaluated by:		Evaluation Date:		Last Evaluation Date:		
Patient Name:				Provider:		Last Risk Level:		
Age:		DOB:						
Risk Stratification Level: Score		Risk 1: 0-1	Risk 2: 2-3	Risk 3: 4-6	Risk 4: 7-9	Risk 5: 10-13	Risk 6: 14-18	
CARE PLANNING		LOW		MODERATE		HIGH	EXTREMELY HIGH	
SCORE		0		1		2		SCORE
1	AGE	19 years to 64 years		65 years to 79 years		80 years or older		
2	HOSPITALIZATIONS (last 12 months)	0 TO 1		2		3 OR MORE		
3	ER VISITS (last 12 months)	0 TO 1		2		3 OR MORE		
4	ALL OFFICE VISITS (last 12 months) *exclude OB visits*	1 to 2		3 to 6		7 OR MORE		
5	CURRENT PRESCRIPTION MEDICATIONS (including oxygen)	0-2 medications		3-5 medications		6 or MORE		
6	LANGUAGE/HEALTH LITERACY	• Primary language: English • Carries out plan of care well • Demonstrates understating of health care needs • Independently seeks health information		• Limited English: verbal skills • Hearing impaired • Carries out some of the plan of care • Requires some reinforcement		• Requires interpreter for all practice interactions • Not able to carry out plan of care without continued reinforcement • Requires routine reinforcement and education		
7	CHRONIC DISEASE (does not include mental health dx)	• No chronic disease • AT RISK: pre-diabetes, borderline hypertension • Non Smoker • BMI 18.5 - 25		• 1-3 chronic diseases diagnoses • 1-15 years tobacco use history • BMI < 18.5 - > 25		• 4 or more chronic disease diagnoses •15+ years tobacco use history • BMI > 35		
8	CHRONIC DISEASE QUALIFIER	• N/A		• 1 or more chronic disease diagnoses uncontrolled		• 1 or more chronic disease diagnoses, severely uncontrolled		
9	MENTAL & BEHAVIORAL HEALTH (includes but not limited to dementias, substance abuse, autistic disorders, eating disorders, developmental delays)	• No Mental Health diagnoses • Long-term stability demonstrated with medication		• 1-2 Mental health diagnoses • Routine follow-up with provider and or mental health provider • 1-2 Significant life stressors (Divorce, Death, Job Loss, Moving, etc.)		• 3 or more mental health diagnoses • 3 or more significant life stressors (Divorce, Death, Job Loss, Moving, etc.)		
10	MENTAL & BEHAVIORAL HEALTH QUALIFIER	• N/A		• 1 or more Mental Health diagnoses uncontrolled		• 1 or more Mental Health diagnoses severely uncontrolled		
11	SOCIAL DETERMINIATION & SELF-MANAGEMENT	• Steady income • Independent • Stable residency • Family or other support • Adequate medical insurance		• Receives some support to meet social needs • Some medical insurance • Lives alone needs some assistance with ADLs		• Lives in a Nursing Home or Assisted Living • Hospice • Homebound • Homeless • Unsafe home environment • Unemployed • Lack of financial or family support that impacts care • Transportation barrier • No medical insurance		
Comments:								
Complex Care Coordinator Referral (Please circle)				YES	NO			

Mercy Pediatric Risk Stratification Tool

Mercy Pediatric Risk Stratification Tool							BIRTH TO 18 YEARS
Risk Level:		Evaluated by:		Evaluation Date:		Last Evaluation Date:	
Patient Name:				Provider:		Last Risk Level:	
Age:		DOB:					
Risk Stratification Level: Score		Risk 1: 0-1	Risk 2: 2-3	Risk 3: 4-6	Risk 4: 7-9	Risk 5: 10-13	Risk 6: 14-18
CARE PLANNING		LOW		MODERATE		HIGH	EXTREMELY HIGH	SCORE
	SCORE	0		1		2		
1	AGE	3 years to 18 years		Birth to 35 months		Premature (<36wks) - 12 months		
2	HOSPITALIZATIONS (last 12 months)	0 TO 1		2		3 OR MORE		
3	ER VISITS (last 12 months)	0 TO 1		2		3 OR MORE		
4	ALL OFFICE VISITS (last 12 months)	Birth to 23 months: 4-5 visits 2 years to 18 years: 1-2 visits		Birth to 23 months: 2-3 or 6-7 visits 2 years to 18 years: 3-4 visits		Birth to 23 months: 1 visit or >8 visits 2 years to 18 years: >5 visits		
5	CURRENT PRESCRIPTION MEDICATIONS	No medications		1-2 medications		3 or MORE Oxygen Use		
6	Family/Caregiver LANGUAGE/HEALTH LITERACY	• Primary language: English • Carries out plan of care well • Demonstrates understating of health care needs • Independently seeks health information		• Limited English: verbal skills • Hearing impaired • Carries out some of the plan of care • Requires some reinforcement		• Requires interpreter for all practice interactions • Not able to carry out plan of care without continued reinforcement • Requires routine reinforcement and education		
7	CHRONIC DISEASE (does not include mental health diagnosis)	• No chronic disease • Nonsmoker/no secondhand smoke • Growth chart: >25th and <75th percentile		• 1 chronic diseases diagnosis • Exposure to secondhand smoke • Growth Chart: >5th percentile or <95th percentile		• 2 or more chronic disease diagnoses • Tobacco use • Growth chart: <5th percentile or >95th percentile		
8	CHRONIC DISEASE QUALIFIER	• N/A		• 1 or more chronic disease diagnoses uncontrolled		• 1 or more chronic disease diagnoses, severely uncontrolled		
9	Family/Caregiver/Patient MENTAL & BEHAVIORAL HEALTH (substance abuse, eating disorders, developmental delays, autistic disorders, depression, ADD, ADHD, etc.)	• No mental health diagnoses		• 1 mental health diagnoses • Routine follow-up with provider and or mental health provider • 1-2 significant life stressors (divorced parents, young parents <20, single parent, unemployment)		• 2 or more mental health diagnoses • 3 or more significant life stressors (divorced parents, young parents <20, single parent, unemployment)		
10	MENTAL & BEHAVIORAL HEALTH QUALIFIER	• N/A		• 1 or more mental health diagnoses uncontrolled		• 1 or more mental health diagnoses severely uncontrolled		
11	Family/Caregiver/Patient SOCIAL DETERMINATION & SELF-MANAGEMENT	• Steady income • Stable residence • Adequate medical insurance • Meets basic ADLs		• Receives some support to meet social needs • Some medical insurance • Meets some of basic ADLs		• Homeless • Unsafe home environment • Unemployed • Lack of financial or family support that impacts care • Transportation barrier • No medical insurance • Foster care		
Comments:							SCORE	
Complex Care Coordinator Referral (Please circle)				YES	NO			

St. Bernards Clopton Clinic Risk Stratification Tool

This four-stratum risk stratification tool adds points to account for mental health conditions.

CPC Risk Stratification, Clopton Clinic, Ark.

Point		Utilization
2	☐	One hospitalization in the last 12 months
5	☐	Two hospitalizations or ED visits in the last 12 months
10	☐	Three or more hospitalizations or ED visits in the last 12 months
		Age
1	☐	60-69 years of age
2	☐	70-79 years of age
3	☐	80 and older
		Health Conditions
6	☐	AIDS not just HIV positive
1	☐	Asthma
1	☐	Atrial Fibrillation
1	☐	CAD
13	☐	Cancer, active
7	☐	Cancer, remission (moderate risk continues care of Onc)
1	☐	Cancer, hx of (low risk if in remission and no problems)
1	☐	CHF
2	☐	Chronic Pain
5	☐	CKD, Stage 3, 4 or Dialysis
2	☐	COPD
1	☐	CVA
2	☐	Dementia/Alzheimer's/Parkinson's
3	☐	DM, controlled
6	☐	DM, complicated/uncontrolled
1	☐	Hemiplegia/Paraplegia
1	☐	HTN
1	☐	Hyperlipidemia/Hypercholesterolemia
1	☐	Hypothyroidism
2	☐	Liver disease
2	☐	MI
2	☐	Obesity
4	☐	Polypharmacy (6 or more routine meds)
1	☐	Peripheral Vascular Disease
		TOTAL Left Column (transfer total to right column)

Point		Mental Health
2	☐	Anxiety
2	☐	Depression
1	☐	Mental Retardation
4	☐	Schizophrenia
3	☐	Bi-polar Disorder
		Behavioral
2	☐	Current tobacco use
3	☐	Non-compliance (>2 no shows/ not seen in past 6 mos with DM/HTN/CHF, etc.)
3	☐	Substance abuse
		Socioeconomic
2	☐	Homebound
2	☐	Lives alone
2	☐	No/little social support
2	☐	No Insurance
		Total right column
		Add total from left column
		TOTAL RISK SCORE

0 – 6 Low Risk

7 – 12 Moderate Risk

13 – 15 Moderate High Risk

> 16 High Risk

Village Primary Care Risk Stratification Tool

This five-stratum risk stratification tool will help show a greater distribution within the practice's patient population.

Patient Name: _____ Age: _____

Medical Record Number: _____ Date of Risk Assessment: _____

Does patient present with these conditions?

PRESENT		CHRONIC	PRESENT		CHRONIC
☐	Allergy, asthma	☐	☐	Malignancies	☐
☐	Cardiovascular	☐	☐	Mental health/psychosocial	☐
☐	Ear, nose, mouth and throat	☐	☐	Musculoskeletal	☐
☐	Endocrine	☐	☐	Neurologic	☐
☐	Eye	☐	☐	Nutrition	☐
☐	Female Reproductive	☐	☐	Renal	☐
☐	Gastrointestinal/hepatic	☐	☐	Respiratory	☐
☐	Genetic	☐	☐	Rheumatologic	☐
☐	Genito-Urinary	☐	☐	Skin	☐
☐	Hematologic	☐	☐	Toxic effects	☐
☐	Infections	☐			

Count as chronic:

- ☐ The patient of caregiver of a dependent patient has a serious and persistent mental illness
- ☐ Hospitalization during last 12 months
- ☐ More than two emergency room visits in last 12 months

Chronic Condition Count:	
Initial assigned risk tier:	

Chronic Count	Tier
0	1
1-3	2
4-6	3
7-9	4
10 or more	5