

# South Dakota's Need for Medication Therapy Management: *Diabetes Prevalence, Blood Pressure Medication Nonadherence, and Pharmacy Access*

**Medication Therapy Management (MTM)** includes a broad range of medical services delivered by pharmacists in collaboration with other qualified providers. Although there may be variations of MTM activities amongst programs, most consist of the following key components: medication therapy review, personal medication records, medication-related action planning, interventions or referrals, and documentation and follow-up.

MTM can greatly improve patient outcomes and enhance overall treatment plans, especially for individuals living with multiple chronic conditions like cardiovascular disease and diabetes. It has also been shown to have a high health impact for the individual as well as a large economic impact when it comes to decreasing long term costs associated with chronic health conditions.

MTM has been implemented across the U.S. in a variety of settings, including primary care clinics, managed care health systems, hospital pharmacies, community pharmacies, patient-centered medical homes, and federally qualified health centers.

By expanding the pharmacist's role in patient care through MTM, populations facing the most barriers to care will likely have increased access to the healthcare they need.<sup>1</sup> In a healthcare environment

such as that in South Dakota (SD), finding ways to expand current practices and identifying innovative ways to address residents' health needs is a necessity. Both cardiovascular disease and diabetes are prominent amongst SD residents and widespread use of MTM may be one solution to help decrease the burden throughout the state.

## **MTM has been shown to:**

- Lower systolic and diastolic blood pressure
- Lower LDL cholesterol
- Lower A1c
- Increase patient knowledge
- Improve patient quality of life
- Improve medication adherence
- Improve the safe and effective use of medications
- Reduce therapeutic duplication
- Decrease total medications prescribed
- Produce health care cost savings
- Produce positive return on investment for health care systems

## Background

South Dakota traverses over 75,000 square miles and is one of the nation's most rural and frontier geographic areas. There are 869,666 persons living in SD and an average population density of 11.5 people per square mile.<sup>2</sup> Of SD's 66 counties, 30 are rural and 34 are frontier (less than six people per square mile).<sup>3</sup> The state's racial/ethnic distribution is 85.1% White, 8.5% American Indian (AI), and 6.4% some other race. Nine sovereign tribes are located in SD. Alarming, SD had the two counties with the nation's highest poverty rate (47.4% and 47.1%) and four counties in the top 10 in the nation.<sup>4</sup> Collectively, 13.7% of persons in South Dakota are living in poverty.<sup>5</sup>

Rural populations, such as SD, typically experience health disparities at greater rates. In general, rural risk factors include geographic isolation, lower socio-economic status, limited job opportunities, higher rates of health risk behaviors, and fewer physicians.<sup>6</sup> The prevalence of health disparities specific to chronic disease in rural SD is high.

SD's rural geography greatly impacts access to healthcare services. Two-thirds of the state is designated by the federal government as a Health Professional Shortage Area.<sup>7</sup> Eighty percent of SD's hospitals are critical access hospitals (CAHs).<sup>3</sup> There are five Indian Health Service (IHS) hospitals and three Veterans Administration hospitals.<sup>8,9</sup> There are six federally qualified health centers (FQHCs).<sup>3</sup> The organizational structure of the state health system does not include city and county level health departments, apart from one city health department in the most populated city, Sioux Falls. Given the state's limited public health infrastructure, the South Dakota Department of Health (SD DOH) is primarily responsible to execute SD public health efforts.

Factors that contribute to health disparities in SD's

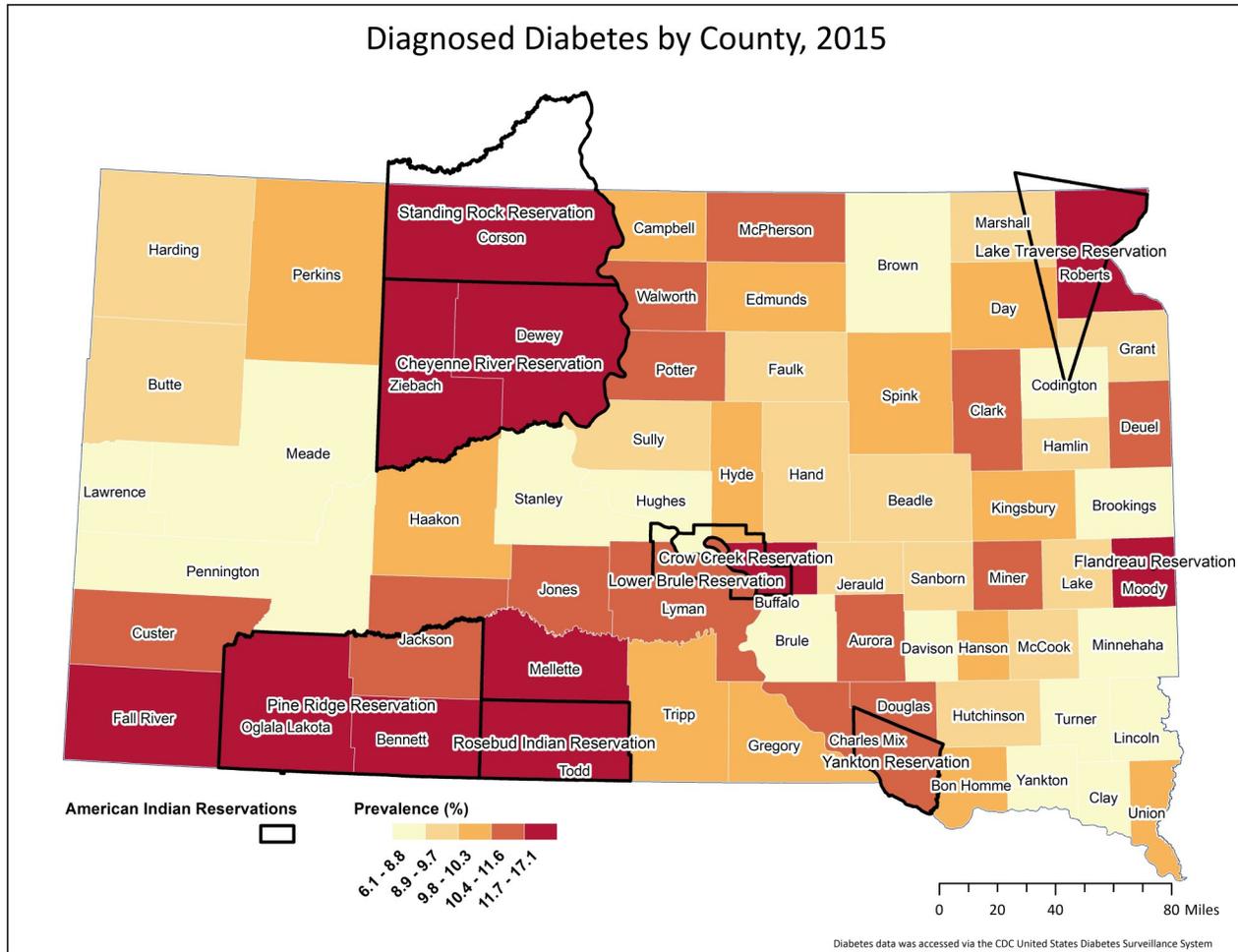
rural communities include poverty, low access to healthcare, and low access to goods and services. Almost one quarter of the state's adults do not have a consistent source of primary care and 10.3% of the population is uninsured.<sup>10</sup> Geographic isolation results in much of the population traveling great distances (over 50 miles one way) to see a healthcare provider. The majority of SD counties are considered medically underserved areas and have larger proportions of older residents who require ongoing access to health care.<sup>6</sup> Poverty impacts the state's population, with 12.9% who are in poverty.<sup>11</sup> Moreover, 12.4% of the population is food insecure, with limited or uncertain access to adequate food.<sup>12</sup> In addition, 34.26% of the state lives in food deserts, which limits their access to food.<sup>13</sup>

### Key Points

- SD has some of the highest poverty rates in the nation.
- Rural populations, such as SD's, typically experience health disparities at greater rates.
- The majority of SD counties are considered medically underserved areas.
- Poverty, low access to healthcare, and low access to goods and services contribute to health disparities in SD's rural communities.

**Diabetes** is the seventh leading cause of death in the US and in SD. Among the American Indian (AI) population in South Dakota, it is the fifth leading cause of death and accounts for 7.8% of all AI deaths.<sup>14</sup> The prevalence of diabetes among SD adults is 8%; however, it is significantly higher among the AI population, with 15% being affected compared to 8% for the White population.<sup>15</sup> The map on the following page shows diagnosis of diabetes throughout the state.

## Diagnosed Diabetes by County, 2015



The areas most heavily affected by diabetes, are AI reservations and their surrounding counties. Health inequity also exists in SD by income. In households having an annual income of less than \$35,000, there is a higher rate of diabetes, at 12% compared to 6% in households with an income of \$75,000 or more.

According to the 2016 Behavior Risk Factor Surveillance System (BRFSS), approximately 7% of adults are aware they have prediabetes; however, one in three people in the U.S. have prediabetes and 90% of them are not aware they have it. Prediabetes puts people at increased risk for type 2 diabetes as well as heart disease and stroke. Modifiable risk factors for prediabetes include being overweight and being physically active less than three times per week. In SD, approximately two-thirds of adults are overweight or obese, putting them at increased risk of prediabetes.<sup>16</sup> Currently, seven SD counties have National Diabetes Prevention Programs (NDPP).<sup>17</sup>

Outcomes for patients with diabetes relies heavily on their management of blood sugar levels, which is closely linked to adherence of their prescribed medication regimen. While the current status of adherence to diabetes medication regimens throughout the state is currently unknown, prevalence of diabetes is known. As individuals with diabetes often have heart disease as well, nonadherence to blood pressure medication may provide a good indication of diabetes medication nonadherence in SD.

### Key Points

- Diabetes is the seventh leading cause of death in the US and SD.
- Diabetes prevalence is significantly higher in the American Indian population than White population, at 15% vs 8%.
- One in three people in the US have prediabetes and 90% are unaware they have it.

**Heart disease** is the leading cause of death in the U.S. and second leading cause of death in SD. Stroke is the fifth leading cause of death in the U.S and the sixth leading cause of death in SD.<sup>2</sup> Overall, cardiovascular disease (CVD) accounts for 27.5% of all deaths in SD. Similar to national data, approximately one in five (21.5%) of those who die from CVD in SD are less than 65 years old.<sup>13</sup> Risk factors for CVD include high blood pressure and high blood cholesterol. According to the 2015 BRFSS, 30% of SD adults are aware they have high blood pressure; however, only about half (54%) have their blood pressure under control according to national statistics. In addition, one-third of SD adults have been told they have high cholesterol, a risk factor for CVD.<sup>15</sup>

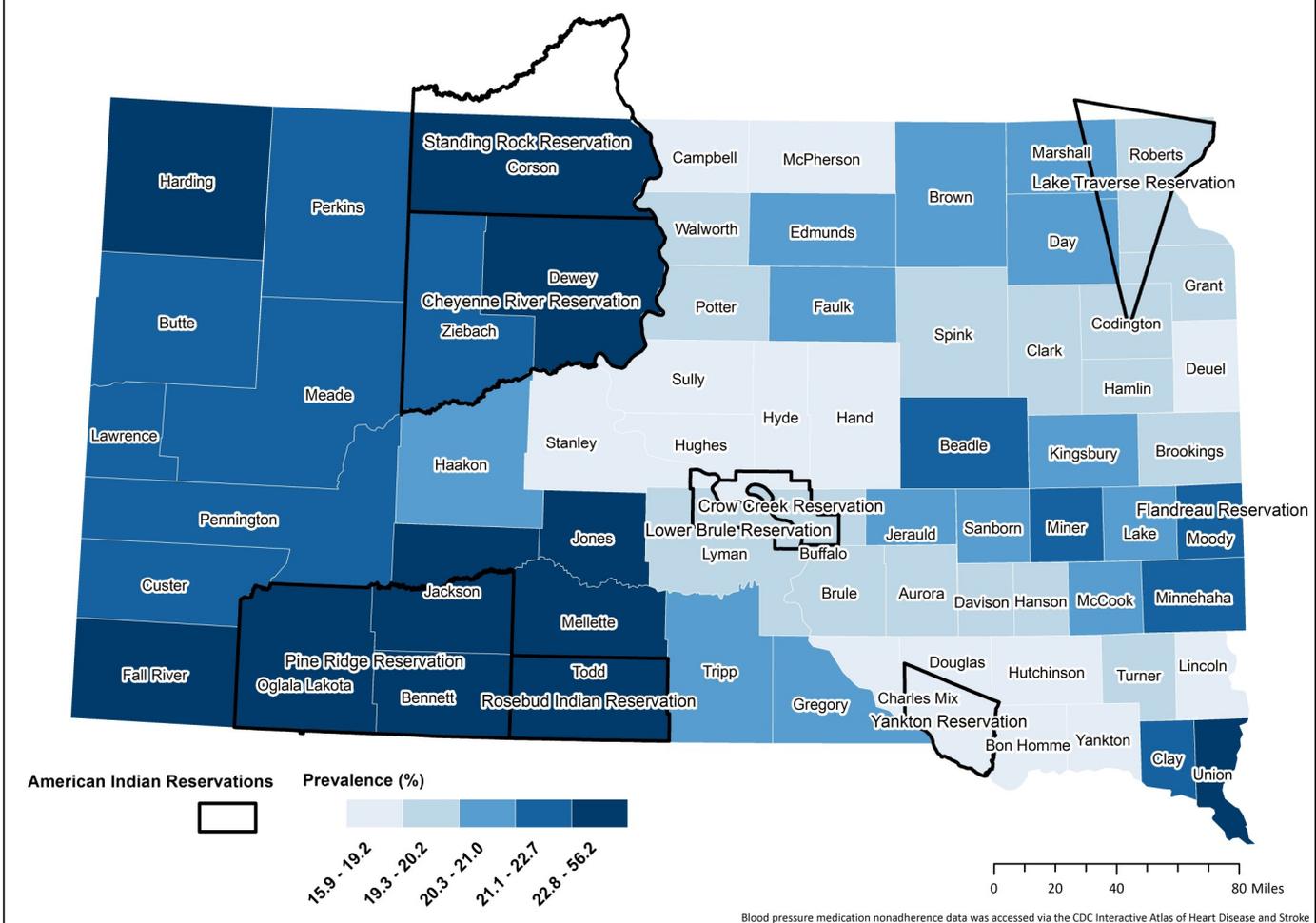
Health inequity contributes to poor health outcomes in SD's low-income populations relative to CVD, who

suffer from higher rates of high blood pressure when compared to high-income populations. Similarly, low-income populations also experience higher cholesterol rates compared to high-income populations.

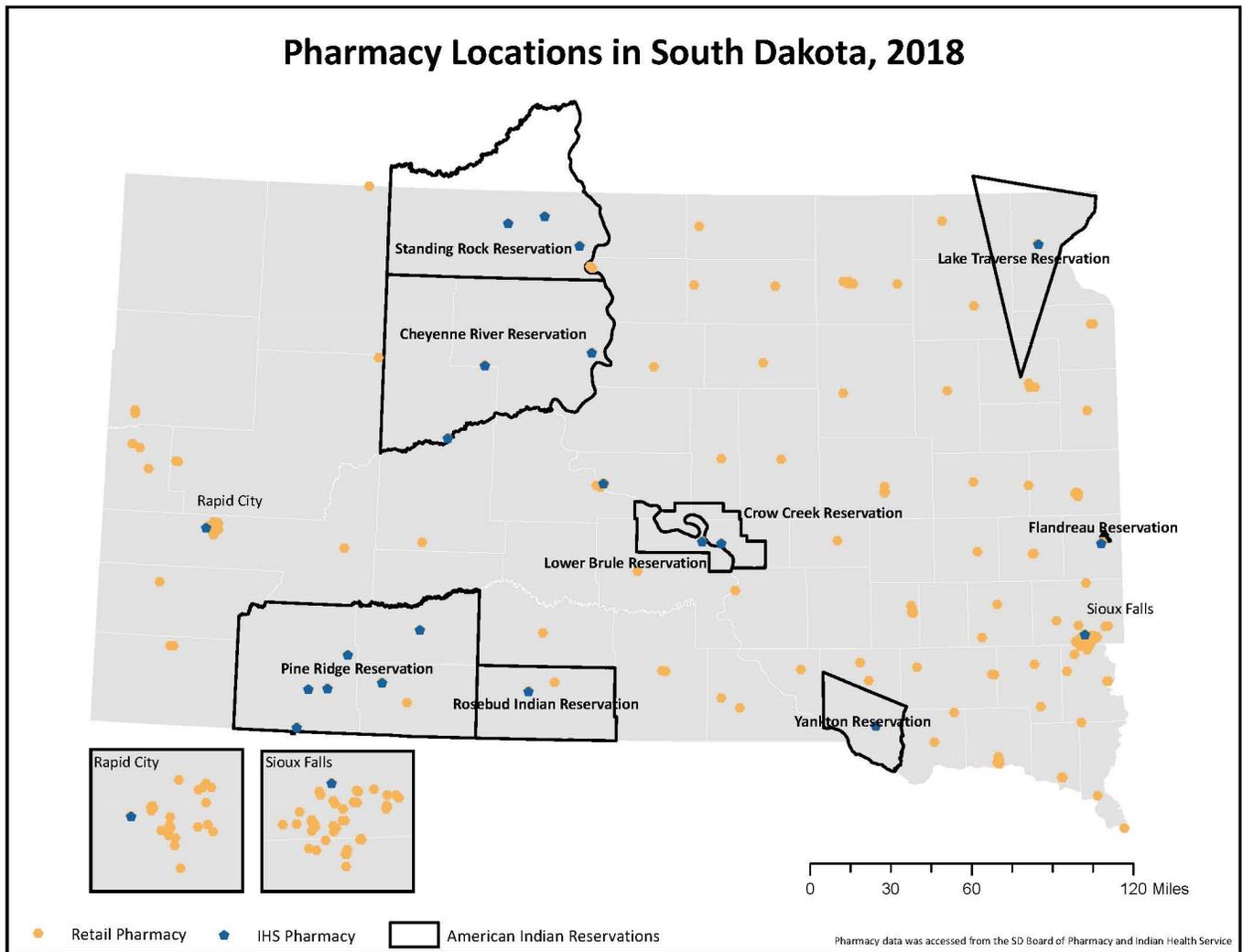
### Key Points

- Heart disease is the second leading cause of death in South Dakota.
- 30% of adults are aware they have high blood pressure, a risk factor for heart disease.
- Nationally, only 54% of adults have their blood pressure under control.
- Blood pressure medication nonadherence is greatest in western SD.

Blood Pressure Medication Nonadherence Among Medicare Part D Beneficiaries Aged 65 and Older, 2015



## Pharmacy Locations in South Dakota, 2018



### Medication Nonadherence

For heart disease and stroke, blood pressure medication nonadherence greatly affects outcomes as it has been shown that morbidity and mortality rates increase with medication nonadherence. With three out of four US adults being nonadherent to their medications, this raises even greater concern. Additionally, out of those with a chronic health condition, only about half take medication as prescribed. Medication nonadherence can be caused by multiple reasons, including forgetting to take medication, not picking up new prescriptions or refills, not taking medications because of side effects, cost, transportation issues, lack of understanding, complex medication regimens, and poor health literacy.<sup>18</sup>

Of those reasons, proximity to a pharmacy may play

a role for South Dakotans. It is estimated that 64% of South Dakota residents live within a 15-minute drive time of a pharmacy and 81% live within a 30-minute drive time of a pharmacy location. Access is not the same for all populations within the state. Among the American Indian population, an estimated 44% live within a 15-minute drive time of a pharmacy and 66% live within a 30-minute drive time.

Medication adherence is a major link to long-term health outcomes. With adherence being a problem, it will be essential for pharmacies to play a vital role in helping resolve this issue. Through implementation of additional pharmacy measures and working with patients and providers to be an integral part of the care team, pharmacists can help eliminate medication nonadherence, leading to better health outcomes and ultimately decreasing cost.<sup>19</sup>

## Cost to South Dakota

According to the CDC Chronic Disease Cost Calculator Version 2.6 5058, CVD costs SD \$981 million, with approximately one-third of that cost being from high blood pressure. Diabetes costs South Dakota an estimated \$339 million.

With similar risk factors and high burden populations, addressing SD's CVD and diabetes needs in a collaborative approach will not only support better health outcomes, but also provide greater efficiency and cost-savings to the delivery of public health services in the state.

## Action

The South Dakota Department of Health is partnering with South Dakota State University (SDSU) College of Pharmacy on a five-year project as part of the 1815 : Improving the Health of Americans Through Prevention and Management of Diabetes and Heart Disease and Stroke grant to work toward creating a statewide community-based practice model that is sustainable and financially viable. With pharmacy being an important member of the patient care team, this will assist in overall prevention and management of diabetes and cardiovascular disease throughout South Dakota.

Year One: SDSU will be conducting a landscape analysis performed at three levels: patient, practitioner, and payer. This will include, but is not limited to stakeholder identification, access pathways, current practices, roles and responsibilities assessment, needs assessment, community asset mapping, and barriers and facilitators to care.

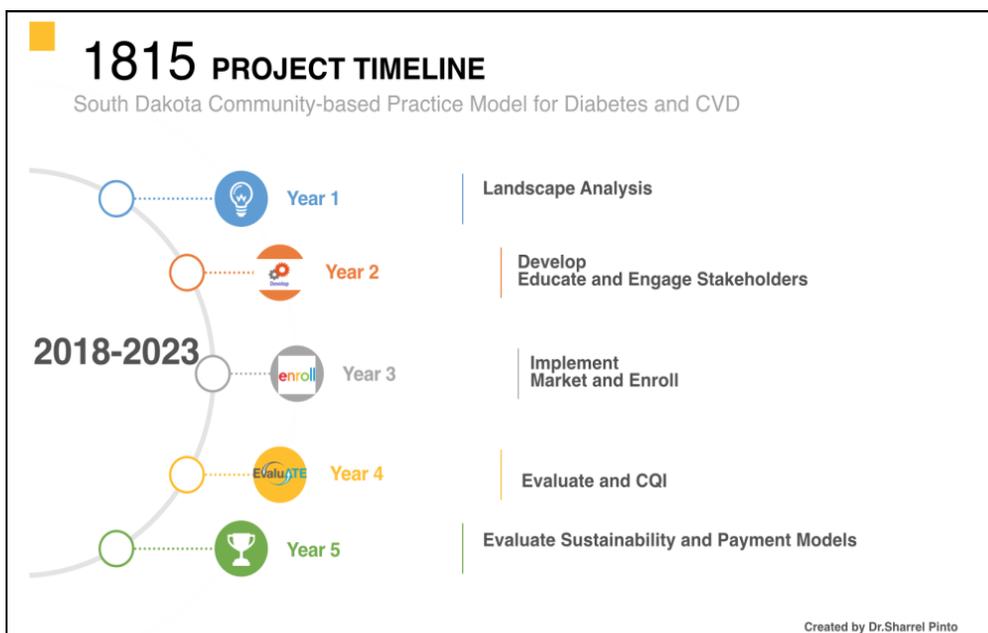
Year Two: Information collected from year one will be used to inform strategic pathways in year two. This year will focus heavily on development by educating and engaging the patient, practitioner, and payer groups on the creation of a community-based practice model of care.

Year Three: This year will focus on implementing the programs developed in year two.

Year Four: By quarter two of this year, all programs should be implemented. The early adopter data should be analyzed and used to engage stakeholders (payers, health systems, professional organizations, policy makers) in conversations about next steps. By quarter four, all data from all sites participating in this statewide initiative should be analyzed and presented. Each presentation should end with an active action item for the health system or site participating in the project. Payers will play a key role in year four. Based on the evaluation reports, SDSU will

work to engage them in some early conversations to test reimbursement models to pilot this year or in year 5.

Year Five: Evaluation from all the sites will be completed by quarter two, present data to stakeholders. Assess sustainability needs and successful payment models. Train practitioner, patients, and other stakeholders on these future payment models.



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