Using GIS & CHWs to Address Comorbid Diabetes and Depression

2021 Virtual Forum for Migrant and Community Health

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Land Acknowledgement:

The work I discuss today is in regards to communities currently living on the occupied land of the Okanagan.

Background

- Working with Family Health Centers
- Part of larger Population Health LAN being completed as part of the Whole Person Care Collaborative
  - Initiative of North Central Accountable Communities of Health and Medicaid Transformation

Type 2 Diabetes and Depression

- 1 in 5 adults with diabetes are also struggling with depression
- People with diabetes are 2-3x more likely to have depression than non-diabetic counterparts
- Only 20-50% of those with co-morbid T2DM and depression actually receive a diagnosis of depression and subsequent treatment
- Compared to general population, Latinx individuals with T2DM are 2x more likely to have comorbid depression, with 33% experiencing comorbidity
- Compared to white counterparts, Latinx are more likely to have overall worse T2DM outcomes
    - Latinx who work as migrant and seasonal agricultural workers are at additional risk due to associations between incidence of diabetes and exposure to certain pesticides

Relationship Between T2DM and Depression

- Research supports a bi-directional, synergistic, and complicated relationship
- Katon (2010) found that co-morbid T2DM and depression resulted in
  - 50% greater risk of all-cause mortality, 24% greater risk of macrovascular complications, 36% greater risk of microvascular complication, and 2x risk for poor medication adherence
- A 10yr prospective cohort study found that T2DM + depression resulted in 1.97x greater mortality than T2DM + no depression
- Depression in diabetes leads to worsening glycemic control
  - This is a determining factor in the development of diabetic outcomes
  - Average increase in Hemoglobin A1c is 1.0%, which is clinically significant

Why Do Depression and T2DM Interact This Way?

- Some of the pieces…
  - Depression alters ability to engage in self-management for diabetes
  - Depression can decrease satisfaction with medical care, and thus decrease adherence

However, “[d]espite the known effect of depression on health behaviors that may adversely affect diabetes management, the increase in [hemoglobin A1c] related to depression was not conspicuously a result of factors such as obesity or nonadherence”

- Lustman et al, 2006

What's the Role of Chronic Stress?

- Chronic stress leads to chronic activation of the hypothalamus-pituitary-adrenal axis and sympathetic nervous system.
- This leads to chronic elevated cortisol levels. Hypercortisolemia leads to:
  - Insulin resistance
  - Reduced response from neural reward system and decreased hippocampal neurogenesis
  - Increased production of inflammatory cytokines
- Examining the role of chronic stress in co-morbidity of T2DM and depression leads us back to conversations of equity and social determinants of health.

“As a determinant of health, medical care is insufficient for ensuring better health outcomes… The social determinants of health account for 80-90% of modifiable contributors to health outcomes, while medical care accounts for only 10-20%.”

- Magnan, 2017

Syndemic Theory

"The synergistic co-occurrence of two or more diseases that is precipitated or exacerbated by social and economic inequality and results in an increased burden of disease for a particular population."

- McCurley et al, 2019

- Epidemiological framework

- Requires three characteristics:
  - clustering or frequency of comorbidity of two or more diseases in a population
  - interaction between the comorbid diseases
  - presence of social and economic adversity that promotes the comorbidity and disease interaction

Role of Geographic Information System (GIS) in Addressing Chronic Disease

"A geospatial perspective on chronic disease expands our focus of public health efforts beyond the individual…[and allows us] to contemplate how place and space shape the distribution of chronic diseases…[and how to] promote health equity and inform public health action…"

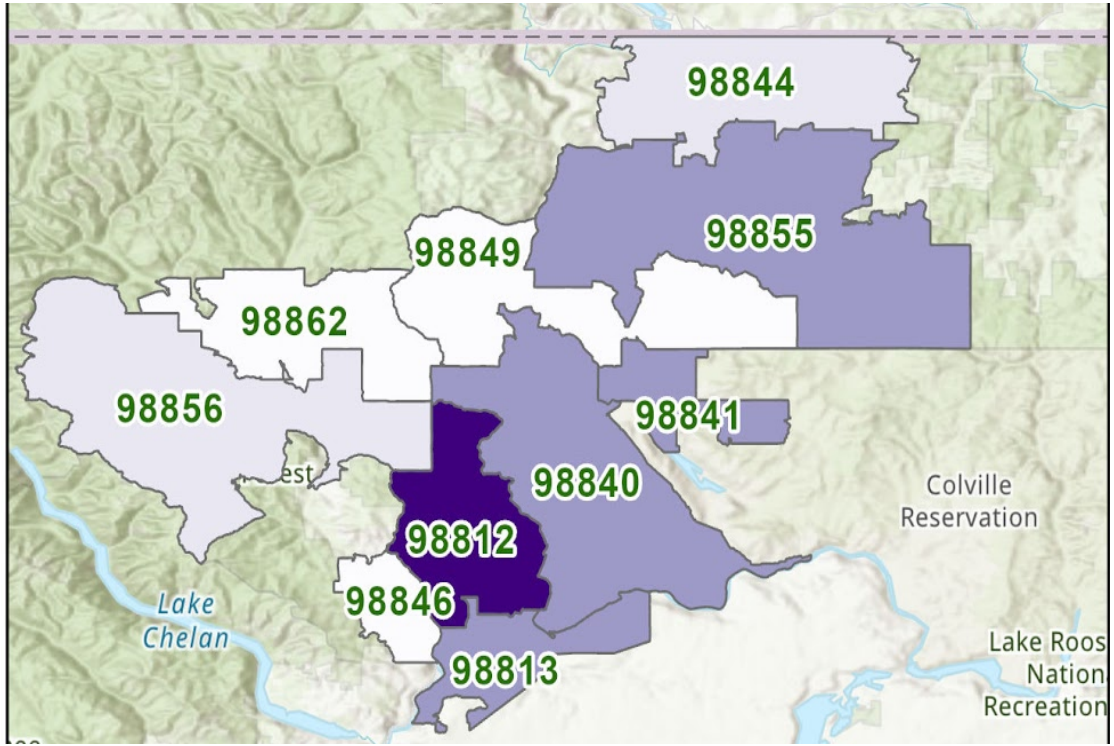
- Casper et al, 2019

GIS Methods

Results & Implications – Basic Descriptive Analyses

- The majority of FHC patients currently diagnosed with Type 2 diabetes identify as Hispanic/Latino (37.1%)
- Of the 286 patients with Type 2 diabetes who also had a HbA1c that was 9 or greater, the majority also identified as Hispanic/Latino (47.9%)
- In regards to patients that had both a diagnosis of Type 2 diabetes and depression, the majority actually identified as non-Hispanic/Latino (51.0%), with only 32.7% identifying as Hispanic/Latino
- For patients with co-morbid diabetes and depression that also had a hemoglobin A1c of 9 or greater, 43.8% identified as Hispanic/Latino, while 41.7% identified as non-Hispanic/Latino.

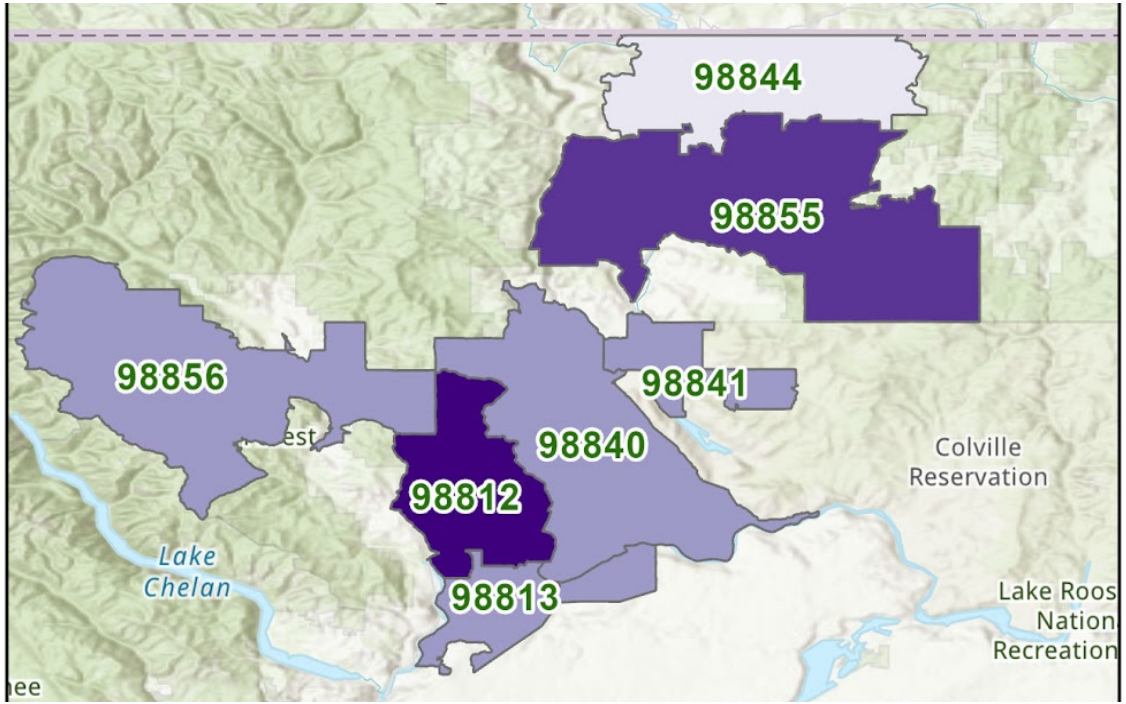
Results & Implications – Utilization of GIS



Total Number of Patients in Each Zip Code that Have Type 2 Diabetes

- </= 50 pts
- </= 100 pts
- </= 200 pts
- </= 300 pts
- </= 350 pts

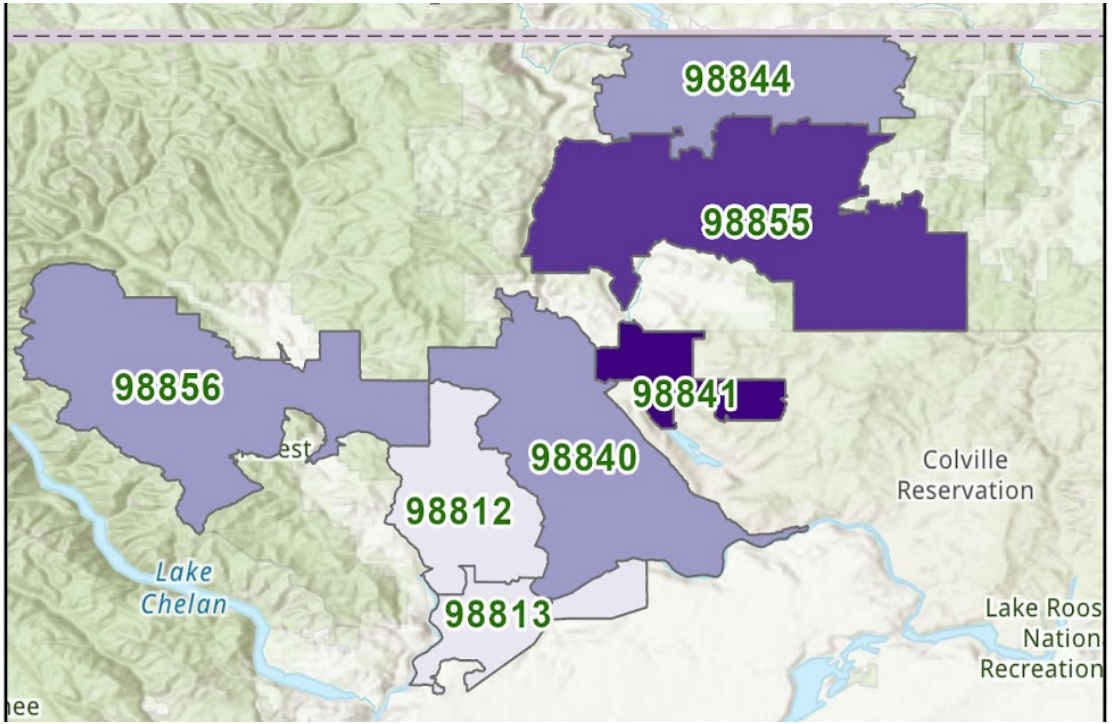
Results & Implications – Utilization of GIS



Percentage of Patients with Type 2 Diabetes In Each Zip Code That Have HbA1c of 9 or Greater

- </= 20%
- </= 25%
- </= 30%
- </= 35%

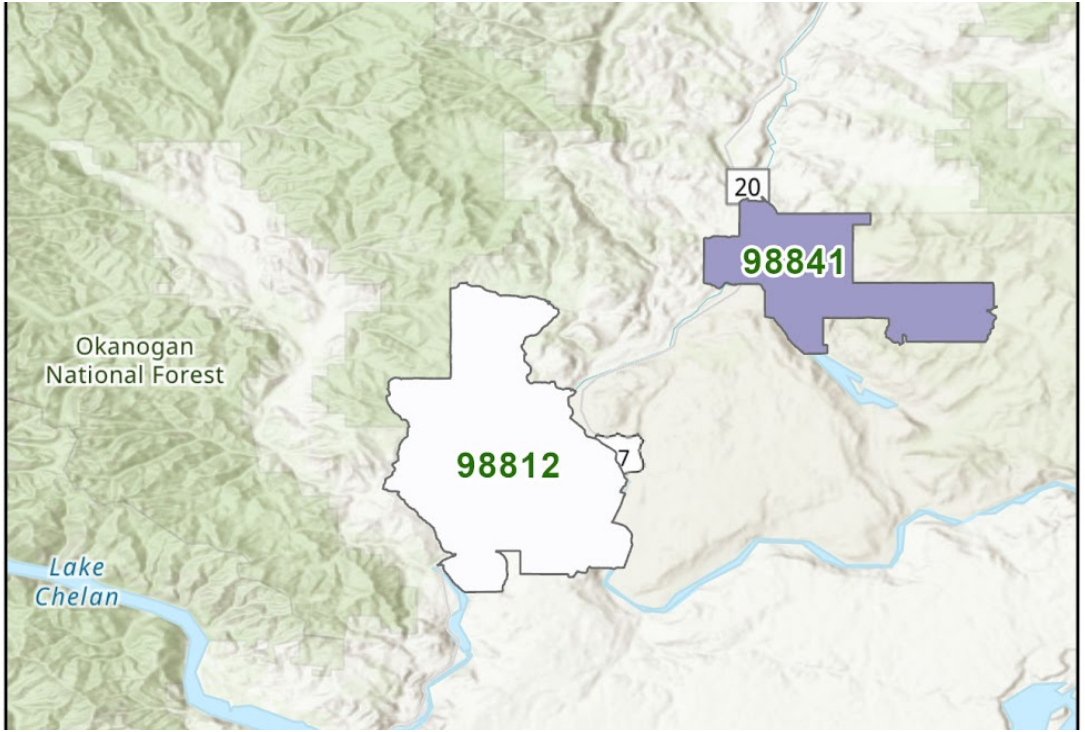
Results & Implications – Utilization of GIS



Percentage of Patients with Type 2 Diabetes in Each Zip Code That Have Co-Morbid Depression

- </= 15%
- </= 20%
- </=25%
- </=30%

Results & Implications – Utilization of GIS



Percentage of Patients with Both Type 2 Diabetes and Depression in Each Zip Code That Have a HbA1c of 9 or Greater

</=4.5%

</= 6.9%

Discussion

- This pilot study highlights the inequities of chronic disease distribution in Okanogan County, WA among patients of Family Health Centers.
- It supports that Latinx suffer disproportionately from Type 2 diabetes and worse health outcomes associated with diabetes.
- This study provides a strong foundation upon which further research can be done. Next steps include:
  - Conducting research on depression/mental health in the Latinx population of Okanogan County
  - Evaluating other social determinants of health influencing T2DM and depression

CHWs at Family Health Centers

Goals for Part 2 of the Presentation:

- Discuss the Whole Person Health model
- Look at examples of how Family Health Center CHWs have approached diabetes and depression as health educators
- Discuss resources used and designed to address the needs of our community
- Review tools to get started with this model
- Discuss how CHWs play a vital role in its successful implementation

Whole Person Health and the Role of CHWs

- Collaborate with diabetes / healthcare teams
  - Available to receive referrals from our medical or behavioral health providers
  - PT identified by providers

- CHW meets with patient via WHO or MA / staff alert
  - Identify and overcome cultural barriers to self-care or behavior change.
  - Consult with patient about barriers to care and SDoH

Family Health Centers is a leader in the treatment of chronic conditions, including diabetes. We have teams that combine certified providers, doctors, nurses, and Community Health Workers who work closely with the patient to manage their chronic condition.

Our approaches include:

- Individual DM Coaching
- DM Family Coaching
- Orientation about COVID-19 and Vaccines
- Nutrition (Dash Diet, Mediterranean diet and other)
- Weight loss control
- Cooking classes
- Depression Management Through Mindfulness
- Prediabetes and Diabetes Control Classes

Managing diabetes can be difficult to do when it is not fully understood.

Work Team Communication

- Internal communication stands out in our essential character as a fundamental aspect that allows us to create a solid, integral, and proactive culture with accessibility to services of excellence.

- Communication channels within our work team
  - Call center team
  - Google chat; we have transitioned from Google hangouts
  - Clinic Team Huddle or Department huddle
  - Group chat with medical team
- Communication with suppliers

When a patient gets referred to us…

1. A CHW certified in Chronic Disease Management and Nutrition assesses patient condition
2. We discuss treatment offered by the provider
3. We create a strategic plan based on the needs of the patient, for example, considering work shifts, time to get up, rest, meals, time to share with the family, communication, biological needs, work hours, time to follow up, economic capacity, environment or surroundings.

What are the steps to diabetes education?

Diabetes Education is for both the patient and family members

Image from diabeteseducator.org

Step 1:

- Support understanding of diabetes – What is diabetes? What are the signs and symptoms? What leads to diabetes?
- Support disease monitoring
- Formulate an action plan with the patient

Step 2:

- Feedback
- Discuss a health eating plan and menu planning
  - Help patient develop routines for healthy eating
- Review action plan for any changes and additions

Step 3:

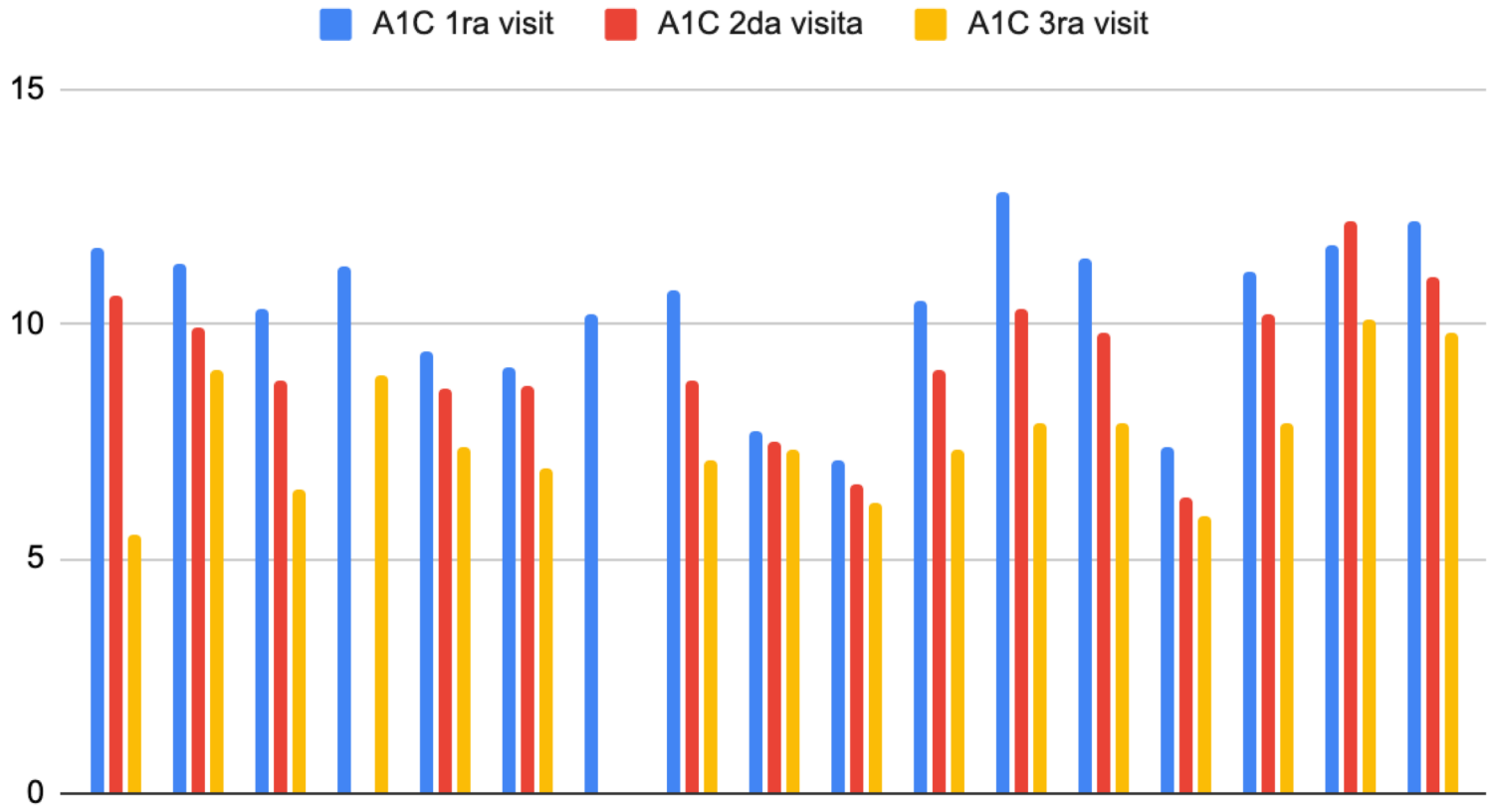
- Feedback on both Step 1 and Step 2
- Discuss monitoring log
- Discuss any emotions that might be coming up
  - Integration of meditation and mindfulness
  - Stress management skills
- Discuss the importance of physical activity and exercise
- Review action plan for any changes and additions

Step 4:

- Feedback and follow-up on Steps 1-3
- Discuss strategies for working with healthcare provider
- Review action plan for any changes and additions

Additionally we create follow-up visits for foots and eye exams, vaccinations, as well as individual and family coaching

Diabetes Patient progress



Additional Resources: Support Groups

- For many people, a health-related support group can fill a gap between medical treatment and the need for emotional support.
- Support Groups provide an opportunity to share personal experiences and feelings.
- They are aimed at anyone who wants to educate themselves on health and personal development issues in a creative way where we can all learn by knowing each other.
- We help people understand that even if they have a chronic illness, they can control the quality of their lives, both physically and emotionally.
- Some of the strategies that we integrate in our groups are related to the wellness wheel (we have a one-year resume) to keep people active and ahead with day-to-day needs.

Support Groups:

Know Yourself

Parenting- Love and Logic

Self-love-The Basis of All Success

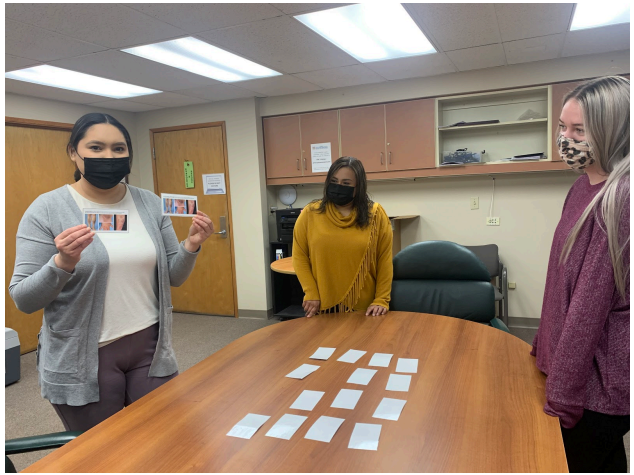
Financial Abundance

Hormones of Happiness

Other Resources

- Activity Groups
  - Walking Club: Once a week from May to August
  - Lifestyle is a celebration (Potluck)

- Designed Education Through Games
  - A critical element in involving patients in healthcare decision making is the patient's health literacy level.
  - We offer tools and techniques that the patient needs through Memory Games.
  - The aim of the game is to discover and learn about:
    - Diabetes-related conditions, symptoms and risks
    - Medical vocabulary



Other Resources, cont:

Internal Resources

1. REDUCED RATES POLICY

Family Health Centers has established a program that reduces fees charged to qualifying patients based on income and family size.

2. ATHENA HEALTH PATIENT PORTAL

The Patient Portal gives you access to your health care information, online 24 hours a day. You can request appointments, view your lab results, or check your medications, all from your home computer or smartphone.

Community Resources

CHW works and collaborates with local agencies to increase access to care and facilitate appropriate use of our community resources.

Thank you!

Any questions?

Contact us at alugo@fhc.us and lrost@bastyr.edu

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