Increasing Public Health and Primary Care Integration in Lane County, Oregon:

A Quality Improvement Project

DNP Project Final Report

Lindsey Adkisson, MPA, FNP-C

Oregon Health & Science University

Abstract

Background: Primary care and public health have largely functioned independently of one another despite their intersecting goals and efforts to improve the health of shared populations. Following the Institute of Medicine's (IOM) 2012 "call to action" for integration of primary care and public health, the Lane County Public Health (LCPH) department in Lane County, Oregon sought to establish a more systematic process for increased collaboration and communication with clinical providers in their county by conducting a baseline needs assessment.

Methods: Data was collected through a series of in-depth, key informant telephone interviews with local clinical providers. Interviews were recorded, transcribed, and analyzed using the online program, Dedoose.

Participants: Participants were selected through convenience sampling. A total of five interviews were conducted. Provider license types included MD, NP, and PA and practice specialties included primary care, urgent care, infectious disease, and emergency medicine. The low response rate for participation was likely due to the COVID-19 pandemic.

Results: Findings from key informant interviews centered around current connections, barriers, strategies for future connection, and specific topics for collaboration between the provider community and the local public health department. Themes were further analyzed by provider characteristics and practice setting.

Conclusion: Providers overwhelmingly viewed LCPH's work in the community as infectious disease focused indicating an opportunity for improved general understanding among providers of public health programs and services. While a multifaceted approach to communication may be needed, providers preferred in-person or phone contact over electronic methods.

Keywords: public health, primary care, integration

Increasing Public Health and Primary Care Integration in Lane County, Oregon

There has been a call to action at both the national and international levels to better integrate and align primary care and public health services in order to reduce the burden of disease and improve population health in communities across the world (Institute of Medicine [IOM], 2012; World Health Organization [WHO], 2013). In 2012, the Institute of Medicine (IOM) released a report calling for improved integration of primary care and public health with shared accountability for population health outcomes throughout the U.S. The IOM concentrated the effort on the "prevention of disease and injury; the promotion of health and well-being; the assurance of conditions in which people can be healthy; and the provision of timely, effective, and coordinated health care" (IOM, 2012, p1). To guide successful integration, the IOM developed a set of core principles that included a focus on population health improvement, community engagement, aligned leadership, sustainability, and a collaborative use of data and analysis (Koo et al., 2012).

Primary care and public health have largely functioned independently of one another despite their intersecting goals and efforts to improve the health of shared populations (Koo et al., 2012). Primary care has been historically focused on meeting the health needs of an individual whereas public health agencies have focused on the overall health of communities (Pratt et al., 2017). However, public health departments are increasingly moving their focus from communicable disease surveillance to chronic disease prevention and management. Primary care, in turn, is shifting towards community-based, and preventative approaches to health and wellness due to financial incentives and recognition such as the Patient-Centered Medical Home certification (Calman et al., 2012). Primary care, particularly federally funded community health

centers, provide an important safety net for underserved populations including patients that are uninsured, of a racial-ethnic minority, lower socio-economic status, facing housing barriers, or part of a migrant community (Lebrun et al., 2012).

One example of shifting the focus in primary care from a sole focus on the individual towards a broader lens, is of improved population health, was the 2007 American Academy of Pediatrics recommendation of a multi-tiered approach by health care providers to effectively manage the growing, global issue of childhood obesity. The recommendation includes prevention education, following the use of weight management protocols, and comprehensive, multidisciplinary interventions that rely on community partnerships beyond the walls of the clinic (Bhuyan et al., 2015). While primary care providers may be the initial point of contact the patient has with the health care system, there is a critical role for the implementation of public health initiatives in order to begin reversing many health issues facing our country, such as the childhood obesity epidemic.

Integration has been defined in the literature as an alignment of infrastructure, funding, vision, mission, values, goals, objectives, leadership, partnership, sustainability, evaluation, community engagement, shared data, and innovation (Pratt et al., 2017). Research suggest that integration of primary care and public health could lead to a synergy "with regard to planning health services according to population characteristics and needs, advocacy for healthy communities, equity and access, clinical early preventive intervention, and clinical promotion of a healthy lifestyle" (Storm et al., 2015, p2). These agencies must also work in partnership with schools, businesses, social service groups, and other community stakeholders to be successful in achieving this goal (Koo et al., 2012). A lack of integrated plans, objectives, and goals translates

to differing community priorities and possibly even conflicting health activities (Storm et al., 2015).

Problem Description

The need for improved integration between the primary care and public health is no different in Lane County, Oregon. State and local planning efforts, including Oregon's Public Health Modernization plan, call for increased local public health department collaboration and communication with healthcare providers in order to increase population access to clinical preventative services (Oregon Health Authority [OHA], 2017). However, according to leadership at the local public health agency in Lane County, Oregon, Lane County Public Health (LCPH), there are not established systems or consistent processes in place to engage and collaborate with area clinical providers surrounding shared population health goals on a routine basis. While clinical care is an important touch point for patients in the community, LCPH can be an important resource for up-to-date information related to local communicable disease trends or other emerging health issues as well as accessing additional support for patients with various health concerns. LCPH leadership feels there is a clear need to establish more opportunities for two-way communication between clinical care providers and public health services in the community.

As part of the local Public Health Modernization efforts, the LCPH Division Manager and the Chief Medical Officer were selected to participate in an 18-month Emerging Leaders in Public Health initiative funded through the Kresge Foundation. The program allowed the LCPH leadership team to build additional knowledge and skills around challenges faced by public health professionals in Lane County. As part of this work, they identified the need to build capacity around improved communication and integration of clinical care and public health

services in their local community. To do this, they developed plans to establish a Health Hub to bridge communication with the clinical provider community across Lane County. The Health Hub consists of the following components:

- **Public Health Round Table.** A quarterly round table discussion forum of health system leadership to identify significant and emerging health issues within Lane County and establish a coordinated, systems-level response;
- **Provider Portal.** A web-based portal for clinical providers in Lane County to access and share up-to-date, local information and data related to emerging health issues, communicable diseases, and other public health initiatives and services;
- **Public Health Grand Rounds.** A quarterly, in-person meeting for clinical providers, health systems leadership, and other community partners focused on case-based learning and sharing of best practice intervention and treatment of pertinent, public health issues facing the Lane County community.

To date, the LCPH leadership team has begun efforts to implement the components of the Health Hub. An initial Public Health Round Table group was assembled and met in August 2019. Additionally, the Provider Portal website was created and a framework for posting information was developed. However, the framework and objectives of the Health Hub continue to lack input from the clinical provider community; the concept has been predominantly driven by LCPH leadership. In order to be successful in the overall goals of improved collaboration and communication between clinical providers practicing in Lane County and LCPH programs and services, there needs to be opportunities to collect feedback from clinical providers.

This study aims to conduct a baseline needs assessment of how clinical providers in Lane County would like to connect with LCPH, barriers they have faced to communication, and

opportunities for improved integration. Additionally, the assessment seeks to identify key health issues or topics in Lane County to be prioritized for integration between clinical providers and LCPH as well as feedback on the existing components of the Health Hub concept. This information is critical for success in moving the Health Hub forward as well as the long-term sustainability of any initiatives around improved integration.

Literature Review

Search Strategy

A literature search was conducted in April and May 2019 using the electronic databases PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), and Cochrane Database of Systematic Reviews. Search terms included *public health, primary care,* and *integration.* Search results were limited to articles published in the English language from January 1, 2010 to May 31, 2019. Additionally, the American Academy of Family Physicians and American Academy of Pediatrics was consulted. The literature revealed multiple themes related to successful integration as well as barriers to integration.

Factors for Successful Integration

Strategic partnerships and strong leadership. A major theme that emerged from the literature was the benefit of strategic partnerships and strong leadership in helping to make integration efforts successful. Pratt et al. (2017) describes the need for both foundational and energizing aspects of partnerships to encourage effective collaboration and elevate the connection beyond building foundations of good relationships. Foundational aspects of partnerships are the formal processes, mandates, and communication tools that create the overall structure of the partnership and ensure that all stakeholders are at the table. The energizing aspects of partnerships are the shared vision, common goals, relational, and synergistic

components that facilitate the collaboration and keep the stakeholders engaged. This, in turn, leads to increased buy-in from stakeholders and overall sustainability of community integration efforts (Pratt et al., 2017).

In their evaluation of Oregon's adoption of the Patient-Centered Medical Home (PCMH) model as a tool to integrate primary care and public health objectives, Rissi et al. (2015) calls out early stakeholder engagement and buy-in from multiple partners as an important strength in the process. This early engagement allowed for more effective adoption of policies and also facilitated any needed future legislation change as stakeholders were already organized and involved in the PCMH model. Researchers found that alignment of a common mission and vision across partners helped to foster this commitment (Rissi et al., 2015).

Similarly, Lebrun et al. (2012), highlights the need for strong leadership that champions integration and sustainability of existing interventions or collaborations. Leaders play an important role of clearly defining expectations of partners as well as outlining responsibilities and contributions. Furthermore, leaders are responsible for setting realistic timelines and plans for the work (Lebrun et al., 2012). Rissi et al., (2015) echoes this sentiment as strong leadership and prioritization of relationships across stakeholders was a critical component of implementing and sustaining health care transformation during Oregon's adoption of the PCMH model. Having visible support from high-level leadership also influenced others at the state and local levels to garner further support of the effort (Rissi et al., 2015).

Coordinated data sharing and use of electronic health records. Another major theme that arose in the literature related to successful integration of primary care and public health was the importance of sharing data across the two sectors, often through electronic health records

(EHR). This allows for improved disease surveillance, management, and coordination of community efforts (Koo et al., 2012; Lebrun et al., 2012).

In their research, Calman et al. (2012) discusses successes in the use of EHRs to help integrate primary care and public health in New York communities. The data sharing initiative between the two agencies allowed for both improved surveillance and management of communicable disease and chronic disease. The EHR was programmed to facilitate automatic data reporting to public health departments when patients presented to primary care complaining of symptoms that fit the profile of contagious diseases, such as influenza. This real-time reporting allowed the public health departments and primary care to better respond to needs during periods of disease outbreak. Additionally, the EHR was set-up to alert primary care providers to emerging public health issues, best practice for routine preventative screenings or immunizations, and local resources that could be given to patients that would connect them to free or reduced community services like smoking cessation support, mammography screening, or diabetes screening (Calman et al., 2012). Similarly, Bhuyan et al. (2015) reported successes with the use of the EHR in helping primary care providers identify children at-risk for childhood obesity in order to provide connection for patients and their families to resources and early intervention.

Training for providers. Adequate training for providers can also help to better integrate public health and primary care (Pinto et al., 2012). Cross-sector training allows providers to become familiar with the community where they work in order to enhance knowledge of local cultures and priorities of the populations they serve. Training can also be an opportunity to cultivate shared support of collaborative activities between the two disciplines and facilitate peer to peer engagement among professionals in the different fields. This helps to promote evidence-

based practice across disciplines. If effective, this can also be an opportunity to improve attitudes of providers who are resistant to integration and encourage mentorship (Pinto et al., 2012).

Training can also be intervention specific and target certain providers or clinics that deliver services that could reduce health disparities or meet a defined population health improvement goal. For example, in their systematic literature review Bhuyan and colleagues (2015) found successes in integration of primary care and public health in order to addresses the epidemic of childhood obesity. Major strategies used included training primary care providers in behavioral and educational interventions such as helping the family set lifestyle modification goals through the use of Motivational Interviewing or connecting the family to community groups focused on reducing childhood obesity. Another example is one community's efforts to increase influenza vaccination rates of pregnant and postpartum women. They did this by having the health department do targeted training to all providers in a community that did prenatal, obstetrics, or primary care (Koo et al., 2012).

Utilization of health care team members. Integration efforts with public health in primary care have been largely focused on the role of the physician. However, other health care team members may be strategically positioned to exercise leadership and coordination in integration endeavors. As an example, Evans-Anew, Mayer, and Miller (2018) argue that nurses may also be well position for collaboration and provide additional opportunities for integration leadership. This may be particularly true for nurses working in public schools and the supplemental nutrition programs for Women, Infants, and Children (WIC). Given their scope of practice and training, nurses are "in an ideal position to advocate, lead, and partner in the advancement of upstream (policy change) and downstream (education) programs dedicated to preventing or reducing health disparities" (Evans-Anew, Mayer, & Miller, 2018, p40).

Another strategy is to engage public health representatives as part of the primary care health care team. Koo et al. (2012) describes one community that sent trained health department representatives directly to primary care offices in order to facilitate a warm hand-off for patient to preventative services and chronic disease management programs offered by the health department.

Integrated funding and an opportunistic policy environment. Integrative funding opportunities focus on addressing the social determinants of health and allow primary care and public health to collaborate rather than be competitive (Lebrun et al., 2012). For example, collective investments in information technology can allow for improved data sharing and exchange (Pratt et al., 2017). While coordinated funding can be a major facilitator of integration, it is often the result of a policy environment that encourages collaboration between the two sectors.

For example, when the IOM report was released in 2012 it was a time of opportunity for integration as the Affordable Care Act went into effect and Accountable Care Organizations (ACO) as well as the PCMH model emerged in local communities throughout the country (Koo et al., 2012). The PCMH model was an integral component of health care transformation in Oregon. The PCMH model of primary care delivery facilitates the integration of public health services with a focus of both caring for the individual health needs of the patient while also improving overall population health (Rissi et al., 2015; Pratt et al., 2017). This has led to reduced hospital and emergency room visits, lower per patient costs, and improved quality of care. Additionally, patients report improved satisfaction with the health care services they receive and easier access to preventative services and overall care. Researchers attribute many of these successes to “the model’s emphasis on patient-physician relationships, comprehensive whole-

person care, and team-based care coordination" (Rissi et al., 2015, p35). For many clinics in Oregon, obtaining PCMH certification was financially incentivized or motivated by ACO implementation (Rissi et al., 2015). The policy environment and incentivized funding encouraged clinics and health systems to act on integration efforts.

Barriers to Integration

Administrative and resource constraints. Limited resources, such as funding and staff time, in both public health and primary care "can make integration an additional burden rather than an opportunity" for stakeholders (Koo et al., 2012, pS90). Administrative and resource constraints were major barriers for many primary clinics in fully adopting the PCMH model in Oregon (Rissi et al., 2015). While stakeholders valued the long-term cost savings of the PCMH model and implementation of population health strategies, the short-term administrative costs for program implementation, infrastructure, and required reporting were significantly underestimated (Rissi et al., 2015).

Provider and clinic factors. Provider or clinic specific factors can also create barriers to integration of primary care and public health. In their research, Koo and colleagues (2012) found that despite the willingness of both parties to integrate and the effectiveness in reaching many primary care providers, clinicians often remained unaware of important health department resources. This included universal reporting forms which were important for disease surveillance and data collection. The authors also found that the two sectors continued to struggle with having different definitions of the "population" they served. This created difficulty in aligning work plans and shared goals (Koo et al., 2012).

The size of the clinic and geographical area served may also create a barrier to integration efforts. Rissi et al., (2015) found these factors influenced the ability of clinics to adopt a PCMH

model. While smaller practices may be nimbler, they often lack adequate administrative support and connections to community partners that allow them to implement population-based interventions.

Rational and Project Aims

Rational

The core principles developed by the Institute of Medicine (IOM) in their 2012 report *Primary Care and Public Health: Exploring Integration to Improve Population Health* will guide this project. These core principles of integration were developed by a committee of experts convened by the IOM that identified past and current efforts within the U.S. to integrate the two sectors. The committee found integration success to be widely dependent on local variables, readiness, resources, and unique health challenges of a given community. Therefore, the IOM committee derived a set of overarching themes, or principles, which tied the integration success stories together. The core principles are:

1. A common goal of improving population health,
2. Involvement of the community in defining and addressing health needs,
3. Cultivation of strong leadership,
4. Sustainability, and
5. Collaborative use of data and analysis (Institute of Medicine, 2012).

Additionally, the Oregon Health Authority's 2017-2019 Public Health Modernization Manual (OHA, 2017) will be used to guide this project. In 2013, the Oregon legislature called for significant changes to the public health system in order to more effectively respond to healthcare transformation and Medicaid expansion efforts. The Public Health Modernization Manual is a framework for the implementation of four foundational programs, including improved access to

clinical preventative services. Multiple goals and objectives are listed under this foundational program related to collaboration with the clinical care sector. For example, the manual calls for local public health departments to partner with local providers to ensure population access to immunization services.

Specific Aims

The project aims are as follows:

1. To describe the interview participant's desire for improved integration and connection with LCPH as well as current successes, barriers, and future opportunities.
2. To identify health topics pertinent to healthcare providers in Lane County for collaboration with public health.
3. To increase patient access to public health programs and services through improved connection between clinical care and LCPH.
4. To improve information and data sharing between agencies in order to create a more efficient community, health system response.

Methods

Setting and Participants

In order to better understand how to build improved collaboration and communication between LCPH and clinical providers, this researcher conducted a baseline needs assessment of pre-selected, clinical providers in Lane County, Oregon through a series of in-depth, qualitative key informant interviews.

Key informant selection and recruitment. Key informants were selected through convenience sampling and identified by the LCPH Chief Medical Officer (CMO) and the Researcher. The CMO made suggestions and provided the contact information of 13 individuals

that worked in a clinical leadership role, such as the Medical Director, for the following pre-identified organizations: Lane County Community Health Centers, PeaceHealth, Oregon Medical Group, Kaiser, Nova Health, and Springfield Family Physicians. Using the established contacts of the LCPH CMO facilitated organizational leadership buy-in for provider participation in the project. Individuals identified worked in primary care, urgent care, and emergency departments. While not part of the original project proposal, the CMO requested that individuals from McKenzie-Willamette Hospital be added to the list of key informants as this organization was a major health system in the Lane County community. Additionally, the CMO added individuals that worked in the field of infectious disease, since this practice setting often interacted with LCPH's Communicable Disease program.

The researcher drafted an email introducing the project objectives and requesting interview participation from the individuals identified as well as their recommendation for one to two other providers from their organization that might volunteer. Interview questions were attached to the email request. The CMO reviewed the draft, made edits, and then sent the email request to the contacts with the Researcher cc'd as shown in Appendix A. Replies were directed to the Researcher for interview scheduling. The Researcher followed-up with a second request for participation to individuals that had not yet responded approximately three weeks after the initial email was sent. The total time period in which project implementation took place was from March 11, 2020 when the initial emails requesting participation were sent to May 1, 2020 when the Researcher concluded interviews.

Eligibility criteria. To be included in the project, participants had to be actively practicing in Lane County and willing to participate in a 20-30 minute interview with the Researcher. Interview questions, shown in Appendix B, were developed in collaboration with

LCPH leadership and sought to illicit responses related to the specific project aims outlined in the previous section. Questions were open-ended in structure and interviews were focused/semi-structured. Prior to beginning the interviews, the researcher piloted the questions with one provider not participating in the project interviews. The purpose of the pilot interview was to assess questions for clarity, comprehensiveness, gaps, and timing. Questions were revised based on feedback from the pilot interview. The initial project proposal stated that interviews could also be held in-person, however, due to safety issues surrounding the COVID-19 pandemic, this was revised, and all interviews took place over the phone. All interviews were conducted by the same person so as not to affect bias.

Ethical Considerations

Participation in all aspects of this project were voluntary. The names of both interviewers and survey respondents were kept anonymous and practice groups were not reported. Prior to use, interview and survey questions were reviewed by LCPH leadership for potential bias or ethical issues. Because of this project's use of human subjects, the proposal was submitted to the Institutional Review Board (IRB) for approval. The IRB deemed this project exempt as it was quality improvement and not research.

Measures

Process measures. Process measures were as follows:

- Completion of no less than 10 key informant interviews with representation from geographical, practice, and specialty groups outlined above.

Outcome measures. Outcome measures were as follows:

- Themes identified in the following: 1) how providers are currently connecting with LCPH, 2) barriers/challenges to connections, 3) strategies for future connection, and 4) topic- specific issues for connection.
- Develop recommendations for future action and an analysis of the following: 1) a shared goal of improving population health, 2) community involvement, 3) strong leadership, 4) sustainability, and 5) collaborative use of data.

Data Collection and Analysis

There were a total of five key informant interviews conducted during the project implementation phase. The Researcher received three responses from the initial 13 potential key informants identified. Two of the three responses occurred after the initial email was sent and the third response came after the second email request. Due to the low response rate, the Researcher reached out directly to two other providers that were known contacts who agreed to participate. These providers were not part of the initial list and were not in clinic leadership roles.

Three other providers from the initial list responded expressing a willingness to participate, however, were lost to follow-up in subsequent communication. One provider expressed interest after the conclusion of project implementation. Table 1 summarizes this information.

Table 1

Summary of Key Informant Recruitment

	Did Participate	Did Not Participate
Responded from first email request	2	-
Responded from second email request	1	-
Responded from direct contact by Researcher	2	-
Initially expressed interest but lost to follow-up	-	3
Responded beyond project implementation window	-	1
Never responded from email request	-	6
Total	5	10

Key informant interviews were recorded, transcribed and uploaded to the online research software, Dedoose, in order to code and organize data. A coding system was developed to pull out major themes identified from the qualitative data. To emphasize a point or provide a tangible example, pertinent direct quotes were collected from the data while maintaining source anonymity. Lastly, points of contention or disagreement among key informants as well as areas that could be further explored were noted for future research.

Unintended Consequences

Impacts of COVID-19 on project implementation. The overall project implementation was heavily impacted by the strain that the COVID-19 pandemic directly placed on the national, state, and local healthcare systems. This unprecedented, public health crisis ramped up in Oregon and Lane County just as the project implementation phase was getting going. COVID-19 impacted the results of this project in several key ways.

The first was the severely reduced time that LCPH leadership had to devote to this project. The LCPH CMO and Public Health Manager, both project supervisors, were actively leading the local health department's Incident Command process to manage the COVID-19 crisis in the community. This consumed much of their time and, naturally, their involvement in other public health initiatives were put on hold. As a result, the timeline for sending out the initial email request to key informants was delayed considerably. Emails went out to prospective key informants as the crisis was well underway in the community.

A second major impact of COVID-19 on this project was the time that local providers had available to participate in extra, volunteer projects. As requests for participation went out to area providers, the local healthcare systems were preparing for crisis response. Notably, those that were being asked to participate in interviews were the healthcare system leaders (ex:

Medical Directors) who were in charge of navigating their organization's response. These individuals faced similar constraints on their time as LCPH leadership. The low response rate from the interview requests as well as those providers that were lost to follow-up is likely a direct result of the COVID-19 crisis. The initial project proposal called for a purposive sampling strategy, but due to the low response rate, this was shifted to convenience sampling.

Impacts of LCPH Incident Command. It is also important to note that LCPH went into Incident Command a total of three times during the course of this entire project. The first was for a positive measle's case in Lane County, the second for a national increase in vaping-related deaths, and the third for the COVID-19 pandemic. While this is an essential function of local and state public health departments, it sparks an important conversation about the limited resources of public health and ability to participate in un-funded, "upstream" initiatives when a public health crisis is occurring in the community. When a local public health department goes into Incident Command, resources – including the job functions and time of staff - are directed towards managing the health crisis. Other projects, such as this, are often put on hold or made less of a priority.

Details of Missing Data or Information

Total number of key informants. The original proposed methods included an objective of achieving a minimum of 10 key informant interviews. As previously mentioned, there was a low response rate likely related to the COVID-19 pandemic. As such, the total number of key informant interviews conducted was five.

Key informant characteristics. The proposed methods for this project aimed at obtaining key informants from diverse practice settings and geographic areas within Lane County allowing for more robust data to guide decision making. At least one key informant was

obtained from the desired practice setting (emergency department, urgent care, primary care, and infectious disease). Key informants varied in license type (MD, NP, PA) and if they served in an administrative leadership role within their organization. Additionally, key informants represented four out of the originally proposed seven organizational affiliations. Unfortunately, however, all five of the key informants practiced within the Eugene-Springfield metro region and no key informants were individuals with practices in the rural communities of Lane County.

Table 2

Key Informant Characteristics

Subject	License	Practice Setting	Leadership Role?
Subject 1	MD	Emergency Department	Yes
Subject 2	MD	Infectious Disease	Yes
Subject 3	MD	Urgent Care	Yes
Subject 4	NP	Primary Care	No
Subject 5	PA	Primary Care	No

Key Findings

Interview Findings

Findings from key informant interviews centered around current connections between area providers and LCPH, barriers or challenges providers faced with connecting to LCPH, and strategies or topics for future connections between the provider community and LCPH. Themes that arose were further analyzed by provider characteristics and practice setting. A major distinguishing characteristic that arose was if the provider acted in an administrative leadership capacity (ex: Medical Director) or not. Additionally, the practice setting in which the provider worked (primary care, urgent care, emergency department, or infectious disease) was analyzed.

Current connections. Several themes emerged from the data related to current connections between area providers and LCPH. These themes included largely connecting with

LCPH on communicable disease topics, receiving updates when issues emerge, and providers working in an administrative leadership role within their organization feeling more connected than those that do not.

Communicable disease. One major theme was that nearly all key informants viewed their connection with LCPH to be communicable disease related. The ways in which they connected included mandatory reporting, patient referrals to LCPH for sexually transmitted infection (STI) testing or other infectious disease resources, contact tracing, and questions about infectious disease management. One key informant stated "I guess [communicable disease is] really how I think about them. I think that there is probably some other public health initiatives that I'm just not really super aware of".

Receive updates from LCPH. Another major theme related to current connections was that many key informants discussed receiving updates from LCPH related to disease outbreaks or other public health crises. An example of this was that all key informants were actively connected to LCPH regarding the COVID-19 pandemic. Key informants mentioned being on the COVID-19 provider calls, receiving email updates, utilizing the COVID-19 call center, or getting routine updates from LCPH via a senior administrator within their organization. As one key informant stated,

> Because I work in the emergency department, most interactions [with LCPH] involve illnesses or outbreaks including when we had the measles outbreak, obviously COVID-19 right now, also when there was a spike in opiate overdoses in the community. [I connect with LCPH] when either [I have] questions regarding infectious processes that might be spreading to the community or from their end when they are reaching out to us for more information like spikes or changes in overdoses or infections or things like that.

Administrative leaders feel more connected. One important theme that arose differentiating key informants that worked in an administrative leadership role (ex: Medical Director) versus those that did not was their general awareness of LCPH and direct connection to LCPH staff. All three key informants that worked in an administrative leadership role felt they had a strong connection to LCPH due to a direct relationship with the LCPH CMO and Communicable Disease (CD) Supervisor. They all felt they knew how to utilize LCPH as a resource and had a direct line to call or text for access to the CMO, CD Supervisor, or consults with CD nurses. One key informant stated "A lot of the reason I'm well connected is because…I do administrative work for the hospital. But most doctors…don't do admin work. They don't have those reasons for needing public health or being integrated with public health." In contrast, the two providers interviewed that did not work in an administrative leadership role both discussed their lack of knowledge on when or how to fully access LCPH resources or staff consults. One of the two non-leader providers had many positive connections with CD nurse consults related to infectious disease management, however, also spoke of a lack of awareness of how else to utilize LCPH as a resource.

Similarly, key informants that worked in an administrative leadership role were more likely to attend trainings or meetings put on by LCPH than key informants that did not work in an administrative leadership role. Only two of the key informants mentioned attending a training put on my LCPH and both worked in an administrative leadership role.

Current modes of communication utilized. Key informants were also asked to describe the modes of communication that they utilized to connect to LCPH, if any. All three providers that worked in an administrative leadership role emphasized multiple times throughout the interviews the importance of the in-person, direct relationship they had with the CMO. All felt

the CMO was easily accessible by phone or text when a question arose or when they needed public health input. As one key informant stated,

> I am in a unique position compared to other emergency physicians in that I am one of the Medical Directors, and so I actually have the phone number directly to the Chief Medical Officer so I can text or call him with any questions.

Similarly, another key informant in an administrative leadership positions stated "Having [the CMO] be accessible is incredibly valuable, generally directly to us as practitioners, I don't know if that is true everywhere. That really helps." The key informants that did not work in an administrative leadership role varied in the communication modes that they used and preferred in connecting to LCPH. One respondent preferred phone and the other preferred email or a website to access resources and updates.

Barriers and challenges to connection. Overall, key informants felt they had positive interactions with LCPH and experienced few barriers or challenges to connection. Key informants largely commented that when they had a specific need for public health input, they had success in reaching someone that could answer their questions for them. One provider stated, "When I have needed to or wanted to [access LCPH] I actually haven't had a barrier. They are really responsive to emails or phone calls with questions. They really know their stuff and they are into helping". Similarly, another provider stated "I actually think pretty highly about how our public health department works. I don't really have major concerns. When I've needed to reach out to them they've been really responsive".

Contact during night or weekend shifts. One barrier that arose during the interviews with several respondents included getting ahold of someone from LCPH outside of regular

business hours when the provider is working a night or weekend shift. As one key informant described,

> In the ED…we see patients all hours of the day. I don't know if it is realistic to ask to contact someone all hours of days and nights. But it's important to be able to call and leave a message or send an email…some way to have direct contact.

Provider lack of time. Additionally, one respondent commented on how busy providers are and the challenge of LCPH connecting to providers when they do not have time to attend a meeting, read an email, or browse a website. This person stated,

> I think challenges are because we are all super busy, for the most part. So one more meeting or one more email gets to be problematic. So whatever is done needs to be perceived to be worthwhile. I don't have the answer, I have the question – that the relevance is key with regards to communication.

Lack of familiarity with LCPH programs and services. Another theme that arose was the general lack of familiarity with LCPH services and resources. This was more frequently mentioned with providers not working in an administrative leadership role than those that were leaders within their organizations, however, did come up in both groups. Several key informants commented that they really only felt they needed LCPH involvement with infectious disease issues, since that is how the role they say LCPH playing in the community. One key informant stated, "I don't know that I've had any barriers, but I think part of it is that I don't know all…that [LCPH] offers and so I'm probably underutilizing what they offer because I'm not aware of the different resources". Similarly, one provider in an administrative leadership role stated, "To be honest, I wouldn't have had any idea how to connect with LCPH prior to this position". This lack of knowledge about the full scope of services and programs LCPH provides in the community as

well as how or when to connect with the organization appears to be a major barrier that spans organizations and providers in both leadership and non-leadership roles.

Future connections. During the interviews, the key informants made several suggestions for strategies as well as topics to connect with LCPH on in the future. Strategies and topics varied among providers depending on their preferred modes of communication and practice setting in which they work.

Provider phone number with voicemail. One strategy suggested for connection was to have a phone number available for providers only (rather than the general public) to call and ask public health related questions. An important feature of this phone number is to also have a voicemail attached so that clinicians working after-hours shifts can leave a message for a call back. One key informant gave an example of a similar system in their work setting,

> For instance, if I have someone in the ED that breaks their arm and is going to go home, I have the ability to leave a message on the orthopedic surgery follow-up line so that they will see the patient or follow-up if there are concerns about it.

In-person contact with providers or other clinic staff. Another strategy that was suggested by multiple key informants in a variety of leadership roles and practice settings was the concept of improved in-person contacts. This could be someone from LCPH leadership, such as the CMO, or someone else from public health that could establish a direct relationship with providers so that they knew who they could contact for assistance or support. On key informant commented,

> Either having [the CMO] or somebody else in leadership or some of the nurses go to various clinics to talk to some of the providers there would probably the best way to establish communication and familiarity so that people feel comfortable calling and know

when they need to call and have a better sense of the services LCPH is there to provide and what they ought to know about.

Similarly, another key informant stated that an in-person public health contact could be "almost like a drug rep – a pharmaceutical rep would have in-person detailing to an office". A different key informant made this same suggestion but emphasized the opportunity to utilize their clinics Patient Care Coordinators (PCC) as the point of contact for LCPH rather than providers. The PCCs are a mix of Medical Assistants and License Practical Nurses and are the individuals that providers often go to for resource assistance for patient care. Having LCPH professionals attend various staff meetings or community-wide provider meet-ups (ex: Grand Rounds) was also suggested as a further way to build these direct, in-person relationships.

Gather and report back. A strategy suggested by several providers in both leadership and non-leadership roles was the concept of one individual from an organization, such as the Medical Director or another administrative leader, gathering information from LCPH and then reporting back to their colleagues at the clinic. This process was described as an informal system in most clinics but could be something that is more formalized. One key informant stated, "if someone in my group had a question then they would ask me or the other Medical Director…and both of us would turn around and ask [the CMO] and send him a text". Similarly, another key informant working in primary care stated, "if one of my colleagues call LCPH for resources, they often share in passing, like at the end of the day".

Email updates and a provider-specific website. In contrast to establishing a phone line or direct in-person relationships, the use of electronic resources such as email or a website garnered mixed reviews among key informants. Most of the key informants admitted that they often overlooked emails that they received and rarely went to websites due to the time it took to search

for the resource they needed. One key informant stated, "I think the emails get overlooked…we get a lot of emails that get filtered out by our Outlook or we ignore". Another stated,

> If a doctor has to go online, look up a number, call it, go through a phone tree, not know who to talk to, maybe get sent to the wrong person – we often won't take time out of our day to do all that stuff.

However, one provider interviewed was very receptive to the idea of having routine email updates or a provider-specific website. This provider actively used online resources for patient care and preferred this method over phone or in-person connections. Another provider, while their preferred method was phone or direct in-person contact, stated,

> I think today [communication] needs to be multi-faceted. I mean I say phones and emails to be able to answer questions but I know to be able to reach the masses just a user-friendly website is key in this day in age.

More specifically, it was suggested that email and websites would be most helpful to providers if LCPH could anticipate needed information that would be otherwise difficult or cumbersome to access elsewhere. For example, local community data, antibiotic resistance, or health guidance to give to patients upon discharge for prevalent conditions or situations in the community, like COVID-19.

Topics for future connection. While the specific, disease-related topics suggested for future connection with LCPH varied depending on the conditions more commonly seen in the setting in which the provider worked, there was some overlap. Table 3 below shows the topic suggestions based on practice-setting. The topics that were suggested in at least more than one practice-setting were: addictions, chronic pain and opioid use, syphilis, tuberculosis, and vaccinations with specific mention of the pneumococcal vaccine. Addictions, particularly in

regard to opioids, was the most frequently mentioned and suggested by four out of five key informants. Second to that was syphilis, suggested by three out of five of the providers interviewed. STIs, vaccinations, and the specific diseases of tuberculosis, hepatitis A, and pneumonia were all mentioned by two of the key informants. General health promotion topics such as chronic disease management (cardiovascular disease, diabetes) and addressing vulnerable populations such as those that are unhoused and identify as LGBTQ was suggested by both key informants practicing in primary care.

Table 3.

Topics for future connection with LCPH

Hospital	Urgent Care	Primary Care
Addictions Hepatitis A Influenza Opioid STIs Syphilis Trauma/injury Vaccinations (pneumonia) PrEP	Addictions Chronic pain/Opioid Emerging tropical diseases Syphilis Tuberculosis	Addictions Antibiotic resistance Behavioral health Chronic disease prevention Chronic pain/Opioid Postpartum support Syphilis Tuberculosis Vaccinations (pneumonia) Vulnerable populations (homelessness, LGBTQ)

Need for general understanding of public health programs and services. Another topic that came up that spanned key informant practice settings and leadership roles was the need for increased awareness among the provider community for public health programs and services. At some point during the interview, most key informants expressed an awareness that they likely did not know the full scope of topics that LCPH worked on within the community.

Role of LCPH versus role of the provider. Key informants were asked to describe the role that they envision LCPH taking on addressing a particular topic in the community versus the

role that they as the provider would play. Generally, the providers interviewed suggested that LCPH would be tasked with developing policies and protocols, participating in health promotion activities such as educational campaigns, obtaining funding for specific initiatives, community organizing, understanding topics at a population level, following high-risk patients in the community, and presenting evidence-based disease management options to providers. In contrast, the role of the provider in addressing a particular topic would be to actually treat or manage the individual experiencing the disease or condition. Several key informants commented that the role of the provider would also be to engage with LCPH in implementing evidence-based practices that are suggested to those in a treatment role.

Comparison to the Literature and Recommendations for Future Action

Comparison of Findings and Gaps in the Literature

There were multiple findings from the literature that overlapped with themes that emerged from the key informant interviews. Pratt and colleagues (2017) emphasized the importance of strategic partnerships, including both foundational and energizing aspects, as well as strong leadership to be successful in integration efforts. During the interviews, foundational aspects of partnership between LCPH and providers such as mandatory reporting and established systems of communication during a public health crisis were discussed widely among key informants. The major energizing aspect that emerged during the interviews was the direct relationship that the providers in administrative leadership roles had with the LCPH CMO creating engagement and buy-in. The key informants also brought up utilzing other health care team members, such as nurses or Patient Care Coordinators, as a strategy to guide integration efforts (Evans-Anew, Mayer, & Millder, 2018). In alignment with research by Koo et al. (2012), three key informants suggested a representative of LCPH making direct, in-person connection

with their clinic or attending routine provider or staff meetings. Additionally, several key informants discussed the possibility of LCPH helping providers identify evidence-based strategies for treating or managing conditions in order to achieve population health improvement goals. Identifying shared population health goals, particularly when supported by collaborative funding or an opportunistic policy environment, was discussed as an important factor for successful integration in the literature (Lebrun et al., 2012; Rissi et al., 2015; Pratt et al., 2017)

Multiple key informants described their lack of time and availability as a barrier to connection with LCPH. Koo et al. (2012) describes limited resources, including funding and staff time, as a challenge to successful integration. He also mentions a lack of awareness of important health department resources as a barrier to integration (Koo et al., 2012). A lack of familiarity with LCPH programs and services, as well as how or when to connect, was a broad theme that emerged among all key informants.

Evaluation of Local Integration Efforts Using the IOM Framework

The following is an analysis of how the IOM core principles of integration between local public health departments and primary care based on findings from the key informant interviews (IOM, 2012). This analysis was requested by the collaborating agency.

Principle 1: Focus on population health improvement. In the report, the IOM emphasizes the need for a shared goal of population health improvement, specified by the unique community characteristics, in order to be successful in integrating public health with primary care (IOM, 2012). Key informants suggested specific topics that, if addressed through collaboration with LCPH, they believed could have a positive impact on their patients as well as the general Lane County community. While key informants seemed broadly aware of the importance of population health improvement, there appeared to be a knowledge gap in the role

providers play beyond individual treatment. This is both a need and an opportunity for LCPH to provide important guidance and training to providers in order to move forward in a population health improvement goal.

Principle 2: Community engagement. The IOM states that "community engagement is required throughout [the integration] process" (IOM, 2012, p70). This includes partners from the local public health department, primary care (or from other practice settings), along with other community stakeholders from different sectors. Several key informants acknowledged that an important role of LCPH in tackling a given public health issue in partnership with providers is leading the community engagement process. Most of the key informants had not been part of such a process in the local community signaling a need for increased outreach and participation.

Principle 3: Aligned leadership. The IOM describes this principle as both the ability to provide direction or initiative as well as "the ability to bridge disciplines, programs, and jurisdictions…the ability to clarify roles and ensure accountability…developing and supporting appropriate initiatives…[and] the capacity to initiate and manage change" (IOM, 2012, p70). The relationships that the LCPH CMO had built with the key informants that acted in an administrative leadership role within their organization is an example of this principle in action. In the interviews, it was apparent that the providers who had a direct relationship with the LCPH CMO felt more connected to public health initiatives and goals within the community. Several also acted as champions within their organizations by relaying information between their colleagues and LCPH or participating in LCPH events. A strategic goal of LCPH to further integration efforts might be to determine how to expand facilitating these relationships to other providers in the community, in order to create more aligned leadership.

Principle 4: Sustainability. How LCPH and providers in Lane County make a commitment to the sustainability of integration efforts requires further analysis. Multiple key informants noted the challenges that LCPH likely experiences in fully outreaching to and engaging providers based on presumed time and resource constraints. An important step in any future integration effort would be to evaluate resources that would support sustainability including dedicated staffing, collaborative funding streams, or shared policies and procedures.

Principle 5: Collaborative use of data and analysis. The shared use of data and informatics between LCPH and community providers is an area for much growth and opportunity. LCPH's interest in the development of a provider-specific website, or Provider Portal, could be one strategy to achieve this goal. This would allow providers to access real-time, local data and information on public health issues affecting the community. While not discussed in the key informant interviews, there are likely other examples of shared metrics that both LCPH and the provider community track that could be a catalyst for collaboration on a particular public health topic.

Recommendations for Future Action

Several key recommendations arise from the literature review and interview findings for LCPH leadership to take into account when considering future integration efforts with local providers. The recommendations are as follows.

Need for increased awareness of role of LCPH. The providers interviewed had a limited view of the role that LCPH played within the community as the majority of the interactions between the two sectors were related to infectious disease management. Increasing general awareness among providers of the full scope of LCPH programs and services may be an important first step in building improved connection.

Consider opportunities for in-person "detailing". The providers interviewed that felt they had the strongest connection to LCPH had a direct relationship with the CMO. This relationship gave the provider a specific public health contact that they knew and trusted; which appeared to be a positive and valuable resource to the key informants. While the CMO likely cannot cultivate this type of relationship with every provider in Lane County, it might be worth considering how this sort of relationship could be replicated in order to further integrate the two sectors. One suggestion was for public health representatives to attend clinic meetings in order to share information and build connection. There could also be a focus on building relationships with other health care team members beyond providers, such as Patient Care Coordinators or nurses. Additionally, a more formal system could be set-up where the health care team member that connects with LCPH on a routine basis would be responsible for sharing, or reporting back, to others in their clinic or organization.

Modes of communication: In-person and phone preferred over electronic. While several key informants agreed that modes of communication should be multifaceted in order to have the biggest reach, the majority of the providers interviewed preferred direct communication over electronic. The mode of communication most frequently mentioned was through phone or text in order to have a faster response rate. One suggestion included having a provider-specific public health phone line to call with an after-hours voicemail set-up. If electronic resources are used, such as email or a provider-specific website, LCPH should anticipate information that is needed by providers that cannot be (or is difficult to) access elsewhere. For example, patient discharge instructions or education related to pertinent public health topics in Lane County. Another example is local data or information, such as local antibiotic resistance. Having local resources available for providers to easily give to patients was also a suggestion.

Consider sustainability with all initiatives. Each integration imitative should include plans for sustainability and how to encourage buy-in from both LCPH and the provider communities. It may also be important to evaluate the role of each partner. Based on information from key informant interviews, LCPH may need to lead in helping providers understand how they can participate in integration efforts beyond their traditional, individual treatment role.

Summary, Limitations, and Next Steps

Overall, key informants felt positive about the role they saw Lane County Public Health playing in the community, their interactions with LCPH representatives, and willingness to participate in collaboration efforts between public health and clinical care. There is likely a great deal of opportunity to further integrate the two sectors within the Lane County community. Central to this, however, will be establishing a foundation of shared, mutual understanding of the role each partner plays and building provider awareness of the full scope of public health programs and services.

There are several limitations of this project, greatly influenced by the COVID-19 pandemic. Limitations include the poor response rate leading to a small number of project participants and the the lack of geographic diversity in participants. Additionally, key informants were in the midst of working with LCPH on the COVID-19 outbreak situation, so responses may have been more heavily infectious disease focused since that was the obvious example that came to mind.

An important next step of LCPH is to re-evaluate the resources going into each component of the Health Hub project based on the findings from this report. Particular attention should be given to the modes of communication used, topics for collaboration, and resources for sustainability. Given the high degree of connectedness that providers serving in administrative

leadership roles felt towards LCPH and that these providers make up a small minority of the total provider population, it would also be beneficial to hear from more providers not working in a leadership role within their organization.

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Appendix A

Email Request to Key Informants for Interview Participation

Good morning [Key Informant name],

Lane County Public Health is seeking the input of senior healthcare personnel in Lane County to better understand how to increase direct communication on public health issues in our community and improve patient connection to public health services.

We are requesting volunteers from your organization that serve in a direct patient care/provider role (MD, NP, PA) to participate in a one-time, 20-30 minute interview with [Researcher name], an OHSU DNP student (cc'd). The purpose of the interview is to get feedback on several ongoing initiatives to improve public health/provider communication as well as finding opportunities for future integration efforts. The interview can be scheduled at the convenience of the volunteer and can be in-person or over the phone. Participant and organization names will be kept confidential and involvement is voluntary. Notes will be destroyed after project completion.

I appreciate your help and am happy to answer any additional questions you may have. The interview questions are attached and [Researcher name] will follow-up directly with any names/contact info you provide.

Thank you,
[Chief Medical Officer]

Appendix B

Key Informant Interview Questions

Introduction Statement

Lane County Public Health is seeking the input of several healthcare providers in Lane County to better understand how to increase direct communication with providers surrounding public health issues in our community and improve patient connection to public health services.

Your participation in this interview is voluntary and responses will be kept anonymous. The information gathered will be shared with Public Health leadership for the purpose of systems improvement. I will also be presenting findings from these interviews as part of my Doctor in Nursing Practice final project. The interview should take no longer than 30 minutes. I will be recording the interview and taking notes.

Do you have any questions before we begin?

Key Informant Interview Questions

1. **As a provider, how would you describe your current connection with Lane County Public Health (LCPH)?**
   Probing Questions:
   - What's your general awareness? What services do you use?
   - What role do you see LCPH serving in the community? What have you seen work well?
   - Have you been involved in any projects, committees, or trainings?
   - How do you connect your patients to public health?

2. **What barriers or challenges have you faced with connecting to LCPH?**
   Probing Questions:
   a. Examples: Knowledge/awareness, time, need, leadership support

3. **How might you imagine connecting with LCPH in the future? What would you like to see from LCPH?**
   Probing Questions:
   a. What would be helpful to you?
   b. What would be realistic for you as a provider?
   c. What types of communication tools would be most beneficial? (Ex: in-person, emails, website, referral)
   d. How might barriers mentioned be overcome?

4. **What are 3-5 health topics affecting your patients that you would like to collaborate with LCPH on?**
   Probing Questions:
   a. What is the need?
   b. Ideas for collaboration strategies?
   c. What would be your role?

d. What is the role of LCPH?

5. **Do you have any other thoughts of comments related to this topic?**