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Creation of a COVID-19 Community Testing Team for Home Health and Hospice

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Abstract

The novel SARS-CoV-2 strain (COVID-19) was identified in Wuhan, China in December 2019 (Eddy et. al, 2020). The resulting US outbreak has affected the Kaiser Permanente (KP) Oakland health care system. With the threat of COVID-19 highest among immunosuppressed and elderly clients, KP Oakland home health and hospice (HH/HO) department is rapidly mobilizing to provide community and in-home testing for eligible clients. A project was created to build a COVID-19 testing team workflow to provide diagnostic and preventative testing. This project focuses on team-based interventions that will change the pre-existing practice of requiring HH/HO clients to travel to remote testing sites or outpatient facilities for COVID-19 specimen collection. COVID-19 sampling in a home environment reduces the risk of community spread and allows those who cannot travel to have the means to be tested (Kumari et. al, 2020).

The mitigation strategies for COVID-19 in the home environment must include specimen collection competencies, testing workflows, and creating case definitions for implementing testing practices. Per current national guidelines and KP mitigation strategies, clinical testing for COVID-19 is strongly recommended for symptomatic patients and required for asymptomatic patients receiving care in acute and outpatient procedural settings (see appendix A).

Outcome measures for this project include the number of HH/HO clients tested by the new KP Oakland testing team, compared to the number of HH/HO patients requiring testing at outside facilities or agencies. The newly developed workflow also tracks the amount of days from COVID-19 test order to testing date.

COVID-19 TESTING TEAM

Introduction

Problem Description

The World Health Organization (WHO) declared COVID-19 as a pandemic on March 11, 2020 (WHO, 2020). The incubation period of the COVID-19 is about 2 to 14 days and transmitted by respiratory droplets and close contact (Rahimzadeh et. al, 2020). Reported illnesses have ranged from mild to severe symptoms and, potentially, death. Significant symptoms include fever, cough, shortness of breath, pneumonia, and other respiratory tract involvement complications (Rahimzadeh et. al, 2020). Health care providers are managing patient symptoms using respiratory therapy, steroids, oxygen supplementation, and medications to expel mucus from the lungs. In severe cases, treatments to support organ function are necessary (Hamm, 2020).

The community spread of COVID-19 has proved to be widespread and ongoing. Proper planning and preparedness is critical for maintaining healthcare services during the ongoing COVID-19 pandemic (CDC, 2020). As the healthcare system becomes increasingly complex and intertwined, different healthcare professionals are often required to work closely as part of an interprofessional healthcare team (Welsch et. al, 2018). It has been reported that effective teamwork and collaboration within healthcare teams improves the delivery of care and thus positively impacts patient outcomes (Welsch et. al, 2018). In response to a regional health crisis, education and leadership needs to be rapid and involve the multidisciplinary team working together to bridge practice gaps (Peterson et. al, 2020).

This project aimed to decrease the number of clients tested remotely and increase the number of tests completed in the home environment.Prior to the integration of a COVID-19 testing workflow, HH/HO clients that required testing were mainly routed to other agencies

outside of KP Oakland. The benchmark data on COVID-19 testing in May 2020, 3 clients were tested at remote testing centers, and 2 clients were tested in the home environment. Before introduction of this change project, the KP Oakland HH/HO testing rate was 66%, and the goal of this project was to provide 95% of all COVID-19 testing for HH/HO clients that meet the testing case definition.

Providing quality specimen collection and testing procedure amid the global pandemic poses unique challenges, especially to the preexisting staff workflow for lab collection (Liebert, 2020). Specific testing practices need to be put into place, including testing in the home environment for HH/HO clients, the use of personal protective equipment (PPE) and infection control practices for obtaining specimens (see Appendix B). The unique aspect of a HH/HO department is the variable environments for healthcare workers to provide care and treat clients. In a fragmented microsystem, it is key to streamline all diagnostic and procedural care to ensure that all healthcare workers are meeting agency competencies. Clients experiencing COVID-19 symptoms should be tested early and efficiently to aide in developing a plan of care.

Available Knowledge

The community resources and home care of KP Oakland's HH/HO department are constantly being tested and improved. In the COVID-19 pandemic, it is crucial that the HH/HO department continually responds in a timely manner with home testing workflows, adequate PPE and testing resources and safe handling and transport of specimen to the laboratory. The PICO question (see Appendix C) for this change project revolves around the development of COVID-19 testing protocols for the home environment. The outcome of this project is the improved testing workflow for HH/HO clients. In comparison, without a change project to create a testing

workflow, faulty or unsafe COVID-19 testing can negatively affect client outcomes and quality of life.

In HH/HO patients, quality COVID-19 testing by the established healthcare team directly increases patient health outcomes and satisfaction (WHO, 2020). By implementing home testing as safely and timely as possible, the hospice and home health clients can receive adequate epidemiological care, regardless of mobility and ability to travel.

Largely due to the variable protocols across Northern California and nationally, a preliminary literature review of COVID-19 testing procedures and workflows yielded mixed results. The search terms for the literature review included the key terms of "COVID-19 testing in the home environment" and "COVID-19 testing in a hospice facility". The literature review was conducted using the database source CINAHL. A total of sixteen sources were reviewed and included in this paper. Included in the literature review were eleven sources from the United States, two from the United Kingdom, one from Singapore, one from Iran and one from India. The literature review included ten published evidence-based research articles, two excerpts from published textbooks, and four internet pages published by respected sources, including the World Health Organization (WHO) and the Center for Disease Control and Prevention (CDC).

A key component of this project was identifying the case definition for testing clients that receive services from the KP Oakland HH/HO department. It would be illogical and unnecessary to test every client on service; instead, a case definition must be developed to elucidate when testing is necessary. Implementing case definitions is an epidemiological requirement to standardize criteria for identification of cases (Pan American Health Organization, 1999). For the purposes of this project, an asymptomatic case refers to a client being tested for COVID-19 without any symptoms or any known exposure. There are many reasons for an asymptomatic test

to be performed, including client transfer to a long-term care facility or an upcoming procedure that requires admittance to a hospital, other acute facility, or outpatient facility. A symptomatic case is a test ordered on a client exhibiting COVID-19 symptoms.

Rationale

The rationale for this project was to standardize the practice of sample collection using a team-based approach for a population of HH/HO patients. Utilizing a framework that helps guide changes suggested by evidence-based literature, the ACE Star Model of Knowledge Transformation is well adapted not only to facilitate nursing change, but to better understand the knowledge behind that change (see Appendix D). Developed by faculty at the University of Texas, the model has five aspects, including discovery of knowledge, a summary of evidence, translating the evidence into clinical practice, integrating the recommended change into practice, and then evaluating the outcomes once the changes are incorporated (see Appendix D).

Using the ACE Star Model (see Appendix D), the interventions are sustainable through the re-evaluation process, allowing for adjustment and continuous improvement. One aspect of the ACE Star Model that applies well to the HH/HO COVID-19 Community Testing Team is an ingrained understanding that clinical information and research is the basis for successful change process. The crucial step of knowledge transformation allows for the systematic organization of knowledge and application of knowledge opportunity. The ACE Star Model is a collaborative process that works well with other improvement methods, including the Model for Improvement (MFI). Advocated by the Institute for Healthcare Improvement (IHI), the MFI asked three simple questions: What are we trying to accomplish? How will we know the change is an improvement? What change can we make that will result in improvement? (Langley et al. 2009).

COVID-19 TESTING TEAM

Specific Project Aim

Providing quality home health and hospice care amid the global pandemic poses unique challenges, especially related to COVID-19 testing procedures and staff workflow (Liebert, 2020). Following both the CDC and the KP agency standards, a workflow was developed. As time progressed, and the pandemic has evolved, the expected outcomes remained the same for the purpose of this project. This change project was implemented to meet a specific aim:

By August 05, 2020, the KP Oakland Home Health and Hospice department will provide 95% of all COVID-19 testing for clients meeting both symptomatic and asymptomatic testing requirements, and will provide testing within 72 hours from physician order.

Methods

Context

The IHI developed a Cultural Assessment Tool (see Appendix E) that enables organizations and agencies to determine the cultural environment through questions about safety, disclosure of adverse events, and client perception of care. Using this tool, an assessment of the microsystem was completed and revealed an environment ready and willing to incorporate change to the infection control and safety workflows. The staff already participate in ongoing training and continued learning, and a culture of safety is supported through just policies for reporting, safety protocols and a commitment to timely communication.

In a HH/HO department, Strengths, Weaknesses, Opportunities and Threats (SWOT) analyses are completed to assess the organization's current situation before deciding on a new strategy for change (see Appendix F). SWOTs provide healthcare leaders with a quick and simple overview of the microsystem and its processes. Moreover, SWOT analyses can provide high-quality information to stakeholders and personnel, and can demonstrate the microsystem's

preparedness for upcoming threats (Ruffinen et. al, 2015). At the KP Oakland HH/HO

department, the unique strengths include clear and efficient leadership over a highly specialized,

sufficient amount of staff for testing. Also, the KP regional organization supports this program

and there is considerable buy-in from the nursing staff, who want a safe and reliable way to test

HH/HO clients.

      A fishbone diagram was created to delve into the various reasons for an increased need

for a HH/HO COVID-19 testing workflow (see Appendix G). The fishbone diagram is a tool to

determine various factors that contribute to a primary concern or problem in a microsystem. This

change project revolves around testing processes, and therefore the fishbone reflects the different

aspects that coalesced into a need for a community testing team and subsequent workflow. As

many HH/HO clients are immobile and unable to travel to remote sites, key factors of the

fishbone diagram include the high risk of contracting COVID-19 in the community outpatient

setting and the increased risk of exposure from family.

      For this project, the KP Oakland HH/HO department has many resources available to

assist the development and sustainability of new workflows. Return on investment (ROI) is a

performance measure that calculates a company's resultant cash flow after change is initiated. As

this change project is implemented across the microsystem, the ROI was predetermined by

regional HH/HO directors to be sufficient for the development and sustainability of the

workflow. Per current CDC guidelines and agency mitigation strategies, PPE is supplied for

every home health and hospice visit indefinitely. Face masks and face shields are a required for

every home visit, regardless of the level of care provided. Masks cost approximately 0.6-1.9

cents per mask depending on type, pricing, availability etc. Additionally, nurses completing

COVID-19 testing wear gloves and don gowns for symptomatic tests.

Four nurses were trained to perform COVID-19 testing through a five-hour session completed on one day. The average HH/HO nurse salary at KP can range from $50-55. Approximate loss for the education session is $1,050 in wages, and does not include the cost for transportation and cost of collaboration with training personnel. Data collection, completed by a clinical nurse leader over a 25 week period, at $72/hour calculates out to $1,250 for data collection. No other initial start-up costs are evident.

Interventions

After identifying a need for testing among clients on service, the KP Oakland HH/HO department strategized how best to implement a COVID-19 testing workflow in late May of 2020. Rolled out in June 2020, an internal workflow was initially developed through team collaboration. A specific number of registered nurses were selected to receive education on swab testing for COVID-19 and proper donning and doffing protocol of PPE. At this time, four nurses have received such education and achieved competency. The nurses were sent to observe and learn directly from the healthcare workers at the "drive-thru" testing sites set up by the regional Kaiser Permanente and located throughout Northern California. It took approximately 5 hours, in a one day period, to complete this training.

After a physician's order is acknowledged by the KP Oakland HH/HO department for a client's COVID-19 test, the Quality Director notifies the interdisciplinary team of a potential symptomatic case vs asymptomatic case. One of the trained registered nurses is then assigned to this specific client's case for the COVID-19 test. These visits are restricted to only obtaining the specimen for lab testing; the nurse is instructed to refrain from providing other care for the client due to the time constraints on the refrigerated specimen. The standard PPE for KP Oakland currently includes a face mask, face shield, and gloves, all of which is appropriate for an

asymptomatic test. After obtaining the specimen through proper swabbing technique, the nurse exits the client's home whilst maintaining proper infection control protocols. The next step in this workflow is the lab, where the nurse must drop off the COVID-19 testing swab within one to two hours of collection. The specific location of the lab is pre-determined, based off of the distance and availability of the labs partnered with KP Oakland HH/HO. The nurse completes a warm hand-off with a laboratory supervisor for the test to be acknowledged.

Clients that present with symptoms of COVID-19 and require a test from the KP Oakland HH/HO are classified as "patients under investigation" (PUI). A PUI mandates that the nurse follow stricter PPE requirements (i.e. gown) and an observer role to be present and available throughout the entire testing process. The observer role can be completed by physical therapists, occupational therapists, home health aide, or another registered nurse. All members of the interdisciplinary team meet competencies for proper donning and doffing procedure of PPE (see Appendix B). The observer remains outside the residence/testing environment for the procedure, and observes how the nurse dons and doffs PPE, handles the specimen, and helps with providing the proper insulated bag for the testing swab. This role is assigned for the swab test only, and the observer does not enter the home environment.

The last piece is the specific documentation for a COVID-19 test. Set forth by the larger regional KP agency, specific parameters for diligent documentation include the testing time, patient tolerance, lab information, and observer presence. At the KP Oakland HH/HO agency, the quality director monitors the tests and documentation, ensuring that the specimen arrived at the lab within the appropriate time frame and was received by the proper personnel. Once the lab results are known, the quality director follows up with the client's healthcare team immediately

for both asymptomatic and symptomatic cases. In the occurrence of a positive, symptomatic

client, the interdisciplinary team moves forward and identifies a care plan for the client.

Measures

A critical part of testing and implementing change is diligent and meaningful

measurement that indicates improvement ("Science of Improvement"). For this change project, a

balanced set of measures was used for all improvement efforts, including outcomes measures,

process measures, and balancing measures (see Appendix H). The outcomes measures for this

project include the number of patients tested by the KP Oakland HH/HO. According to the

benchmark data obtained in May 2020, only 2 clients were able to be tested by healthcare

providers through KP Oakland HH/HO, and 3 clients had to travel to remote testing centers.

Translated into a percentage, KP Oakland HH/HO's goal was to reach 95% of all COVID-19

testing for clients that met case definitions. Process measures, which study if the change is

performing as planned, include the days from order to testing date. The microsystem and testing

team was given a goal of under 72 hours between the time of the test being ordered and the nurse

performing the COVID-19 test in the home environment. This is a regionally-accepted

timeframe, and was consistently met by both KP Oakland HH/HO and other remote testing sites

prior to this new workflow introduction. Finally, balancing measures for this project are the

patients identified by personnel for testing that do not meet the current case definition for

specimen collection.

Ethical Considerations

The rare and special aspect of HH/HO care is the client's supreme right to privacy; the

client resides in their own environment, and spends large chunks of time free from healthcare

professionals and support staff invading their space or territory (Scott et. al, 2003). In regards to

informational privacy, the client's electronic health record is accessed through the testing nurse's

departmentally-issued laptop or tablet, and accesses the internet using a VPN. The process of

data collection involves chart auditing and only tracks the total number of asymptomatic versus

symptomatic cases. This data does not incorporate any protected health information. In regards

to autonomy, COVID-19 testing is only completed on clients who consent to testing. Autonomy,

or the ability to act according to one's knowledge and judgment, is sustained through nursing

care within existing professional, regulatory, and organizational rules. A self-assessment was

completed to determine if this change project met ethical requirements. This project's aim and

methods do not come into conflict with commonly recognized values. Additionally, this project

does not involve identifiable persons. No potential conflicts of interest were identified.

Results

Change projects require a timeline chart to identify when to approach goals and when to

measure the change (see appendix I). A chart was developed after the onset of the COVID-19

pandemic to help the microsystem's leaders identify necessary steps for creating a testing

workflow. The chart included dates for project conception, implementation and evaluation. The

initial steps of the chart outline the time for project definition, aims and measures development,

primary literature review, identification of changes to test, creation of the testing team and

coordination of staff training. The project roll-out began on April 24, 2020. By May 8, 2020,

workflows were developed through multiple interprofessional collaborative meetings; testers

were trained and met competency standards for COVID-19 testing by May 15, 2020. A driver

diagram was created to identify the order in which certain tasks needed to be implemented

throughout the project timeline (see appendix J). Included in the driver diagram is the flow from

the creation of the testing team into the wider tasks of education and creation of workflows.

Over the course of the project, various factors affecting the success of the change were identified and required new methods and adjustments. For example, the observer role was introduced after a need for an extra support staff during testing was identified. Additionally, a specific time frame for data collection had to be established to determine a clear point to stop and take an overview of the project and data. There were no unexpected costs associated with this project. Although much national and global attention around PPE shortages extended throughout this project, the regional KP organization mitigated such shortages appropriately and the microsystem never had to ration PPE.

Benefits of this change project were identified through data review and tester feedback. Personal, informal interviewing of testers gave valuable insight to the testing process and aided workflow modifications and sustainability. The testers of the microsystem reported feeling safe and supported in the testing and specimen handling process. Reviewing charts and tracking cases is a continual process that ensures clients can be tested in an appropriate time frame.

Discussion

Summary

In March 2020, COVID-19 was declared a pandemic and was catapulted into a primary concern for healthcare agencies across the United States. KP Northern California mobilized quickly to develop new standards of practice for testing, specimen handling, data collection and organization of testing resources. In a home health and hospice population, invasive diagnostic procedures are not generally a standard for care; however, it became clear that developing a COVID-19 testing workflow was necessary after HH/HO clients required both symptomatic testing and asymptomatic testing by April and May of 2020.

The key findings of this project indicate that the COVID-19 community testing team workflow is successful. A total of 26 symptomatic tests and 97 asymptomatic tests were performed by the KP Oakland HH/HO community testing team (see Appendix K). A combined total of 123 tests were performed between June 15, 2020 and September 28, 2020. This project far exceeded the projected goal of 75 completed COVID-19 tests (see Appendix H). A total of four clients were diverted for testing through other agencies; therefore, approximately 97% of HH/HO clients that met the case definition received testing through the KP Oakland community testing team. This exceeds the project charter goal of 95%. As this project surrounds workflow development and efficiency, a successful percentage of testing is key for the sustainability of this new testing team to continue through the COVID-19 pandemic.

Conclusion

COVID-19 diagnosis and treatment continues to be a challenging issue, as infection and mortality rates increase and cause significant expenditures on the United States healthcare system. Community spread of COVID-19 is projected to spike through November and December of 2020 and extend into the spring of 2021. This change project was developed during an integral period of the pandemic and need for COVID-19 testing will still be prevalent after the official end of this project. The developed workflow of testing for COVID-19 is sustainable for continuation and will be further led by quality improvement leaders and nursing staff in the microsystem. Implications for other microsystems and mesosystems include the potential for the workflows to become established practices in the regional KP departments of Northern California. Additionally, this project could be adapted for testing clients in long-stay acute rehabilitation centers, nursing homes and residential facilities.

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unwanted hospital treatment. The ACP plays an important role, asserts the authors, before

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the COVID-19 pandemic. The authors offer recommendations on how to simulate and

educate COVID-19 for healthcare workers.

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interprofessional collaboration models in the microsystem.

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In this published article on the WHO website, the WHO Director-General presides over a

media briefing on COVID-19 transmission risks and potential for spreading. The WHO

Director-General identified the importance of community testing and keeping healthcare

systems active and funded.

Appendix A

Project Charter

Title

Creation of a COVID-19 Community Testing Team for Home Health and Hospice

Global Aim

During the COVID-19 response, KP Northern California is able to order and test any Home Health (HH) or Hospice (HO) patient as needed in community sites and patient's homes

Specific Aim:

To provide community visits for HH/HO COVID-19 clinical (symptomatic) and pre-clinical (asymptomatic) patients, and perform case defined testing for patients by June, 2020.

Background:

The novel SARS-CoV-2 strain (COVID-19) was identified in Wuhan, China in December 2019. The resulting US outbreak have affected the Northern California (NCAL) Kaiser Permanente (KP) health care system. Defined as a pandemic, the mitigation strategies, including creating clinical and preclinical, case defined testing practices. These testing practices put into place, which include drive-through testing at several hospitals throughout Northern California, require the use of PPE use and infection control practices for obtaining specimens like those used in the inpatient setting. COVID-19 sampling in a home environment reduces the risk of community spread and allows those who cannot travel to have the means to be tested. Per current CDC guidelines (2020) and KP mitigation strategies, clinical testing is recommended. This will expand to preclinical case-defined testing. A project was created to build a Community Testing Team workflow to provide COVID-19 testing on a population of home-based home health and hospice patients in Northern California.

Goals

The goal of this project is to organize information regarding HH/HO community testing and standardize this practice of sample collection using a team-based approach for a population of home health and hospice patients that includes the following:

1. Partner with TPMG to coordinate communication and outreach

2. Identify and educate RN team on testing practices and donning/doffing competencies, based on the latest CDC evidence and KP workflows

3. Refine case definitions for clinical and preclinical sampling identification

4. Organize specimen collection, including supplies and lab drop off workflow

5. Develop scheduling workflow

6. Create tracking mechanism for testing results

7. Monitor patient testing data and integrate into the larger KP system for tracing and proper isolation activities

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Appendix B

DC PPE Guidelines For Testing COVID-19

Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

Before caring for patients with confirmed or suspected COVID-19, healthcare personnel (HCP) must:

- **Receive comprehensive training** on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper care, maintenance, and disposal of PPE.
- **Demonstrate competency** in performing appropriate infection control practices and procedures.

Remember:

- PPE must be donned correctly before entering the patient area (e.g., isolation room, unit if cohorting).
- PPE must remain in place and be worn correctly for the duration of work in potentially contaminated areas. PPE should not be adjusted (e.g., retying gown, adjusting respirator/facemask) during patient care.
- PPE must be removed slowly and deliberately in a sequence that prevents self-contamination. A step-by-step process should be developed and used during training and patient care.

Preferred PPE – Use N95 or Higher Respirator

Face shield or goggles

N95 or higher respirator

One pair of clean, non-sterile gloves

Isolation gown

Acceptable Alternative PPE – Use Facemask

Face shield or goggles

Facemask

One pair of clean, non-sterile gloves

Isolation gown

Donning (putting on the gear):

More than one donning method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of donning.

1. **Identify and gather the proper PPE to don.** Ensure choice of gown size is correct (based on training).
2. **Perform hand hygiene using hand sanitizer.**
3. **Put on isolation gown.** Tie all of the ties on the gown. Assistance may be needed by another HCP.
4. **Put on NIOSH-approved N95 filtering facepiece respirator or higher (use a facemask if a respirator is not available).** If the respirator has a nosepiece, it should be fitted to the nose with both hands, not bent or tented. Do not pinch the nosepiece with one hand. Respirator/facemask should be extended under chin. Both your mouth and nose should be protected. Do not wear respirator/facemask under your chin or store in scrubs pocket between patients.*
   - **Respirator:** Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
   - **Facemask:** Mask ties should be secured on crown of head (top tie) and base of neck (bottom tie). If mask has loops, hook them appropriately around your ears.
5. **Put on face shield or goggles.** Face shields provide full face coverage. Goggles also provide excellent protection for eyes, but fogging is common.
6. **Perform hand hygiene before putting on gloves.** Gloves should cover the cuff (wrist) of gown.
7. **HCP may now enter patient room.**

Doffing (taking off the gear):

More than one doffing method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of doffing.

1. **Remove gloves.** Ensure glove removal does not cause additional contamination of hands. Gloves can be removed using more than one technique (e.g., glove-in-glove or bird beak).
2. **Remove gown.** Untie all ties (or unsnap all buttons). Some gown ties can be broken rather than untied. Do so in gentle manner, avoiding a forceful movement. Reach up to the shoulders and carefully pull gown down and away from the body. Rolling the gown down is an acceptable approach. Dispose in trash receptacle.*
3. **HCP may now exit patient room.**
4. **Perform hand hygiene.**
5. **Remove face shield or goggles.** Carefully remove face shield or goggles by grabbing the strap and pulling upwards and away from head. Do not touch the front of face shield or goggles.
6. **Remove and discard respirator (or facemask if used instead of respirator).*** Do not touch the front of the respirator or facemask.
   - **Respirator:** Remove the bottom strap by touching only the strap and bring it carefully over the head. Grasp the top strap and bring it carefully over the head, and then pull the respirator away from the face without touching the front of the respirator.
   - **Facemask:** Carefully untie (or unhook from the ears) and pull away from face without touching the front.
7. **Perform hand hygiene after removing the respirator/facemask and before putting it on again if your workplace is practicing reuse.**

CDC

*Facilities implementing reuse or extended use of PPE will need to adjust their donning and doffing procedures to accommodate these practices.

www.cdc.gov/coronavirus

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Appendix C

PICO Question

P	I	C	O
Patient, Population or Problem	Intervention or exposure	Comparison	Outcome
hospice and home health clients meeting the case definition for COVID-19 testing	testing & specimen collection workflows	faulty, unsafe workflow or protocol to test clients for COVID-19	improved testing workflow for home health and hospice clients.

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Appendix D

ACE Star Model of Knowledge Transfer
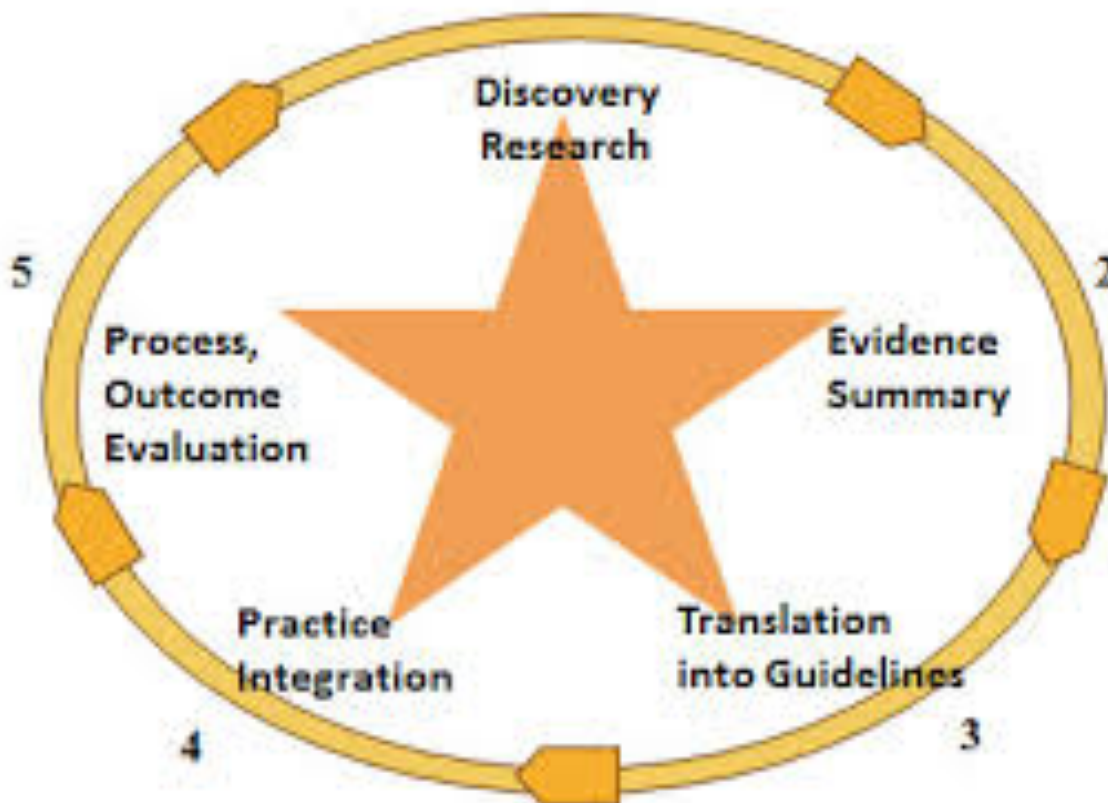
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Appendix E

IHI Assessment Tool—A Culture of Respect, Communications, and Disclosure

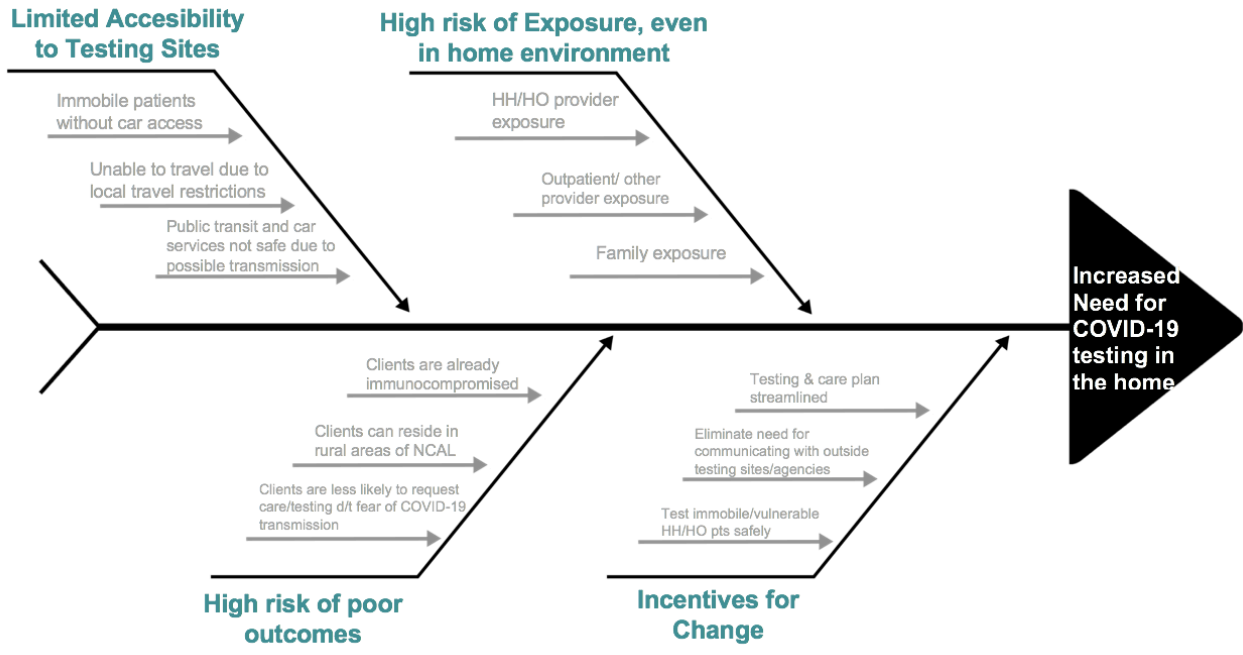|	Element**	Y	+-	N
Internal Culture of Safety	The organization is grounded in the core values of compassion and respect and the ethical responsibility to always tell the truth to the patient and family.	Y		
	There is an expectation for ongoing communication, honesty, and transparency that is set from the board and leadership and closely monitored.	Y		
	Error is seen as the failure of systems and not people.	Y		
	All can expect support at the sharp end of unanticipated outcome and near-miss.	Y		
Malpractice Carrier	There is a commitment to rapid disclosure and support.	Y		
	There is a written understanding of how cases will be managed in partnership between patient/family/carrier.	Y		
	Mechanisms are in place for rapid respectful resolution.	Y		
Policies, Guidelines, Procedures	There is a policy on patient and family communications.	Y		
	There is a policy on patient and family partnerships. Organizational infrastructure for clinician support exists.	Y		
	There are policies on disclosure and documentation.	Y		
	Procedures are known and in place for internal and external communication of sentinel events.	Y		
	Guidelines/policies support a fair and just culture (non-punitive) and the reporting of adverse events.	Y		
	There is a written crisis communication plan. This plan is centrally located and easily accessible by all staff.	Y		
Training	Ongoing training programs are in place for all staff on communication, expectations, policies, procedures, guidelines.	Y		
	There is just-in-time coaching (training) for disclosures.	Y		
Disclosure Processes in Place	There is rapid notification of patient/family and activation of support—typically immediately around what is known.	Y		
	There is a team to support staff preparing to disclose (coaches).	Y		
	Root cause analyses commence immediately, are closely managed, and the results are shared, including with the patient and family.	Y		
The Disclosure	The organization is transparent and honest.	Y		
	Responsibility is taken.	Y		
	We apologize/acknowledge.	Y		
	There is a commitment to providing follow-up information.	Y		
	The caregiver is supported throughout the process.	Y		
	The organization provides continuing support for the patient/family.	Y		
	All hospital staff disclosing are trained in their role	Y		
Ongoing Support	Resources are available to assist families experiencing unanticipated outcomes (not limited to error) – support is defined by needs of the patient and family (e.g., emotional support).	Y		
	Resources are available to assist staff at the sharp end of unanticipated outcomes (not limited to error) – based on the needs of the clinician (e.g., emotional support).	Y		
	Procedures are in place and are known to ensure ongoing communications with patients, families, and staff.	Y		
Resolution	Procedures are in place and are known to bring the case to closure respectfully, as viewed by the patient and family.	Y		
Learning	Mechanisms are in place to ensure learning by the board, executive leadership, MSEC, and across the organization.	Y		
	Measurement systems are in place to assess the impact of communication, disclosure, and support (as well as quality and safety) practices on premiums, claims, cases, and payments.	Y		

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Appendix F

SWOT Analysis

Strengths	Weaknesses
What do you do well? What unique resources can you draw on? What do others see as your strengths?	What could you improve? Where do you have fewer resources than others? What are others likely to see as weaknesses?
- Clear clinical leadership - Buy in from nursing staff - Nurses specialized in palliative and hospice care - Clear guidance from regional organization - Sufficient staff numbers for testings	- Vague & disorganized national guidance on COVID-19 guidelines and testing procedures - Potential shortages of PPE/swabs - Variable testing competencies
Opportunities	**Threats**
What opportunities are open to you? What trends could you take advantage of? How can you turn your strengths into opportunities?	What threats could harm you? What is your competition doing? What threats do your weaknesses expose to you?
- Directly providing COVID-19 resources to HH/HO clients - Inform clients early and reduce the risk of transmission through education - Reduction of inappropriate interventions/screenings - Allow clients to be tested without travelling	- Potential for HH/HO personnel to contract and spread COVID-19 - Screenings may be seen as unnecessary by the family/client - Poor information processes means key prognostic information is not shared effectively

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Appendix G

Fishbone Diagram

Limited Accesibility to Testing Sites
- Immobile patients without car access
- Unable to travel due to local travel restrictions
- Public transit and car services not safe due to possible transmission

High risk of Exposure, even in home environment
- HH/HO provider exposure
- Outpatient/ other provider exposure
- Family exposure

High risk of poor outcomes
- Clients are already immunocompromised
- Clients can reside in rural areas of NCAL
- Clients are less likely to request care/testing d/t fear of COVID-19 transmission

Incentives for Change
- Testing & care plan streamlined
- Eliminate need for communicating with outside testing sites/agencies
- Test immobile/vulnerable HH/HO pts safely

Increased Need for COVID-19 testing in the home

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Appendix H

IHI Science of Improvement: Family of Measures Assessment

Measures, Outcomes, Processes and Balancing

Measure	Data Source	Target
Outcome Measures		
# Home Health/Hospice patients tested by KP Community Testing Team	KPHC Report	75 patients
# patients requiring testing at test site or hospital	Agency Spreadsheet	2 patients
Process Measures		
Days from Order to Testing Date	KPHC Report	72 hours from request to test
Balancing Measures		
Patients ID'd who don't require a test due to not meeting the current case definitions criteria	Case Definitions	2 patients

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Appendix I

Project Timeline

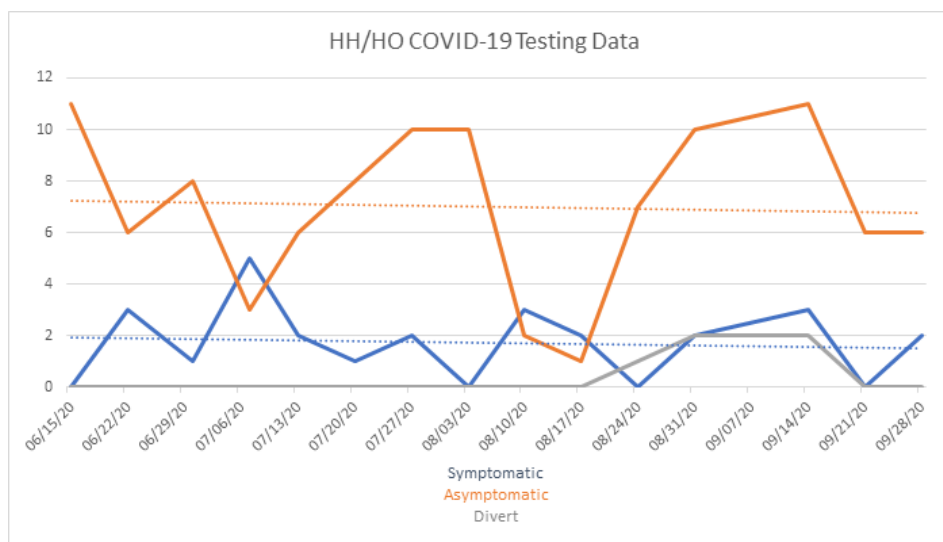Project Timeline

	04/24/2020	05/01/2020	05/08/2020	05/15/2020	06/08/2020	07/08/2020	08/05/2020	08/19/2020	08/30/2020
Define the project	X								
Develop Aim, Setting, Charter, Measures	X								
Review Literature	X								
Identify Changes to Test, Driver Diagram	X								
Develop workflows, Coordinate lab activities		X							
Testers trained			X	X					
First patient									
Review data				X	X	X	X	X	X
Observer Role created and trained					X				
Modify Workflows as Needed					X	X	X		
Reach sustainability							X	X	X
Data Collection Under Review							X	X	X

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Appendix J

Driver Diagram from Project Charter

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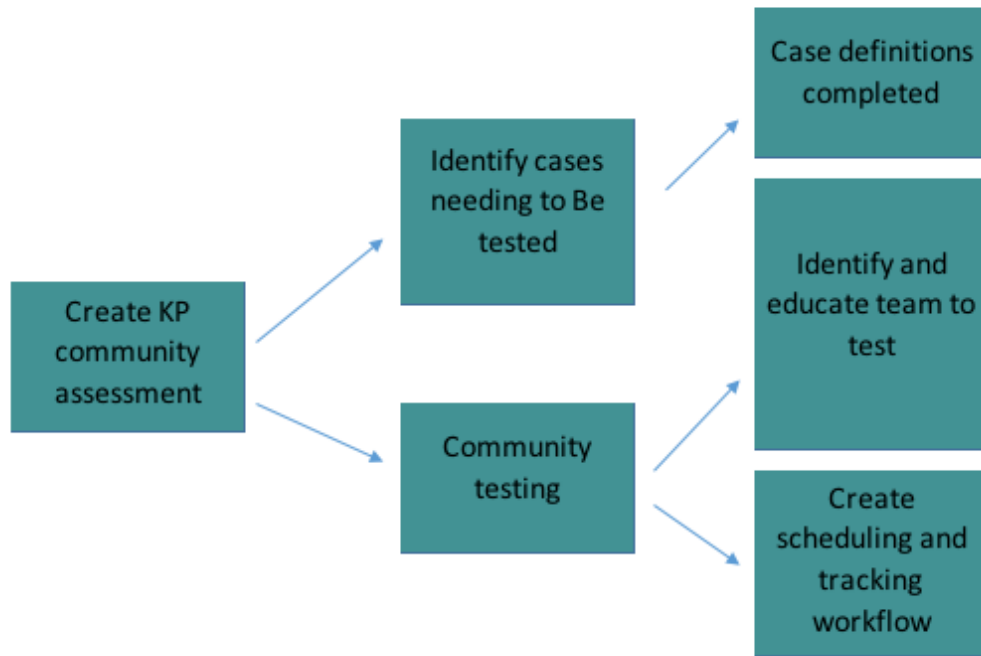
Appendix K

Run Chart and Total Testing Results

Total Symptomatic Tests: 26

Total Asymptomatic Tests: 97

Total Tests Diverted through Other Agencies: 4