

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



SUMMARY

LOCAL PROBLEM

Sub optimal performance in immunizing our patients against influenza

DESIGN & IMPLEMENTATION

- Identify the best evidence based guidelines, in accordance with Government regulation, pertaining to Preventative care
- Identify a way to capture the preventative care workflow in the EMR

GOALS

- Identify the elements of preventative care that are evidence based & recommended according to age, gender, documented results and known chronic problems
- Utilize our EMR to help improve preventative care
- Provide proactive and preventative health management services to our patients

VALUE DERIVED

- Enterprise wide standardization of preventative care for Influenza resulting in a 304% increase in vaccines administered, which in turn help to drive down the employee sick days
- Improved alerts to minimize alert fatigue
- Inclusion of clinicians in the build and design decisions optimized the workflow and improved adoption
- Engaging leadership from the start, helped to drive accountability and utilization





Osama Al Swailem MD, MA

Chief Information Officer – Associate Professor

Salam Everyone, I am King Faisal Hospital & Research Center

Bachelor of Medicine & Surgery
King Saud University

Masters & Post Doctoral Fellowship
Columbia University

King Faisal Specialist Hospital & Research Center

2014 – Present

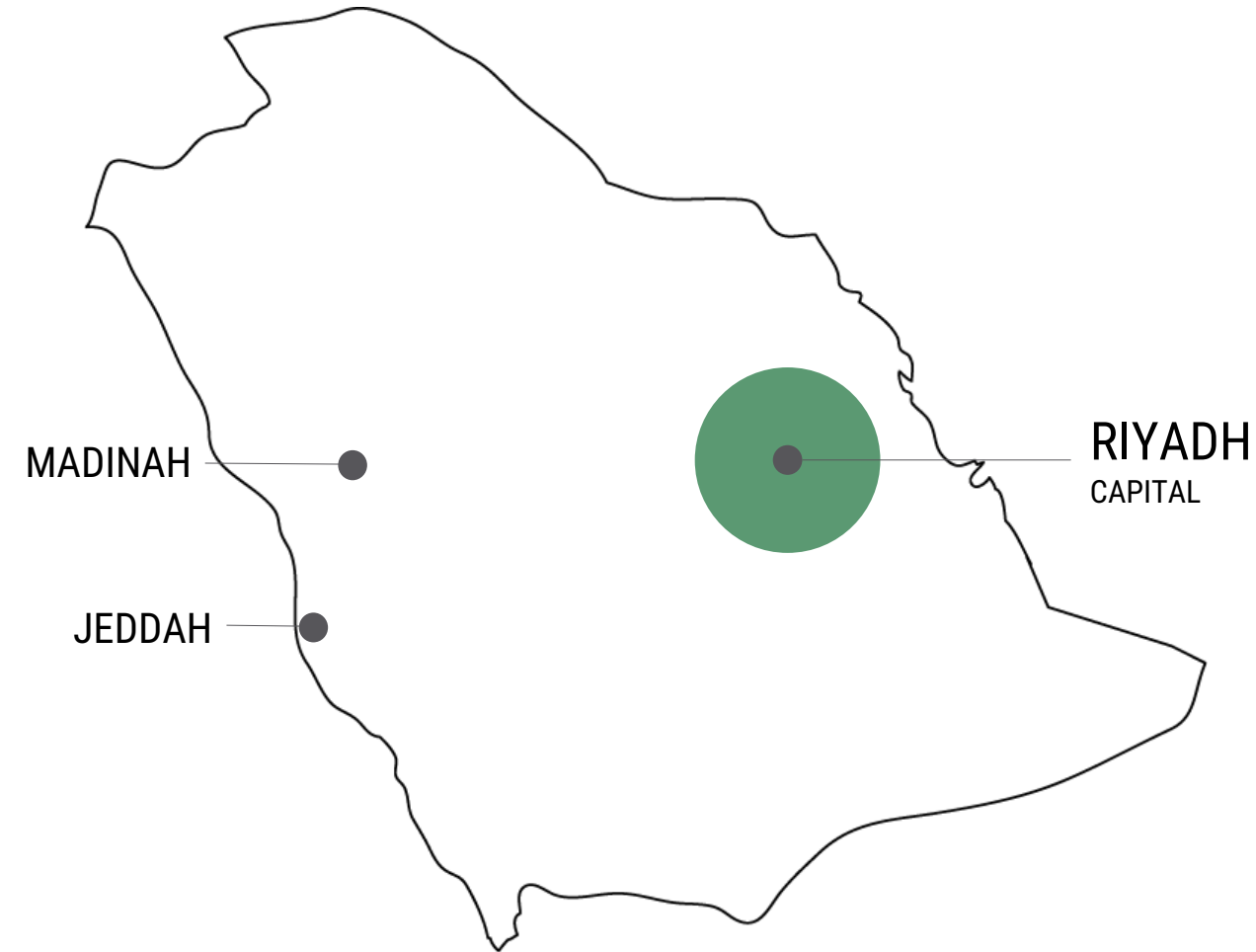
Chief Information Officer

2008 – 2014

Director Medical Informatics



ABOUT SAUDI ARABIA



Population 29.897 Million



Literacy 81%



Language Arabic



King Salman bin Abdulaziz Al Saud

DID YOU KNOW

- Saudi Arabia is the 13th largest country in the world
- Saudi Arabia is the largest country in the world without a river
- Riyadh's camel market is one of the largest in the world and sells about 100 camels per day
- Jeddah is a 3000+ year old city and houses the tomb of Eve (Arabic: حَواء Hawa), the mother of mankind

ABOUT KFSH&RC



Newspaper:

Al Riyadh

Date:

10 November 1970

KFSH&RC FACTS & FIGURES

MISSION Provide the highest level of specialized healthcare in an integrated educational and research setting

VISION To be a world-leading institution of excellence and innovation in healthcare



Est 1975



Kingdom of Saudi Arabia



9.4M Population Served



Riyadh, Jeddah & Madinah



31 Smart Centers

CY2018



1,846 Beds



31,741 Admissions



1,297,497 OP Visits



1,472 Transplants



56,932 OR Hours



13,687 Employees
68 Nationalities



95,382 ER Visits

KFSH&RC RANKINGS



#1

Out of 141 centers in the UK & USA in the volume of Pediatric living donor **liver** transplants

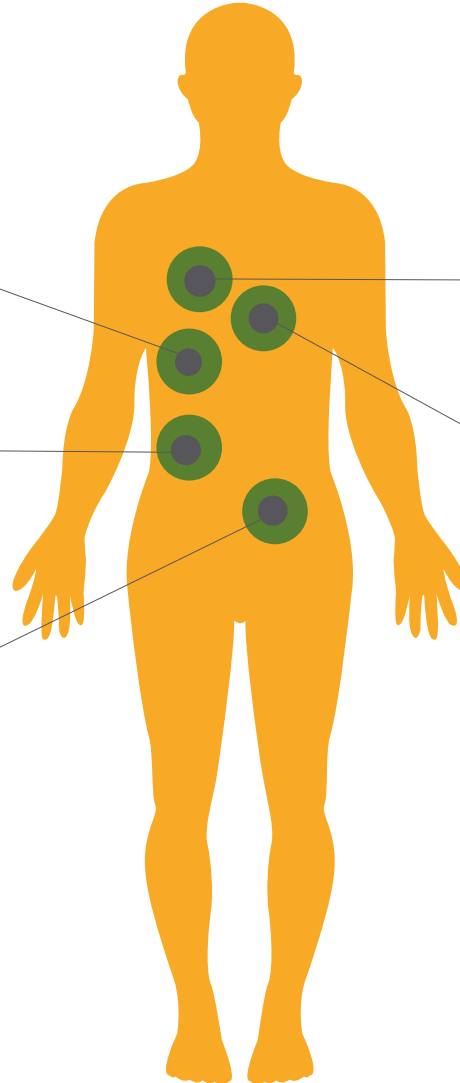
#1

Out of 257 centers in the UK & USA in the volume of Pediatric living **kidney** transplants

TOP

4%

Out of 272 centers in the USA reporting to Center of International **Blood & Marrow** Transplant Research



56th

Out of 71 centers in the USA in the volume of **lung** transplants

TOP

10%

Of **heart** transplants worldwide

RESEARCH

17 Citation Average

EDUCATION

Graduate 1 out of 5 Consultants in the Region

KFSH&RC ACHIEVEMENTS





Fahad Bin Dayel, RN

Director Application & Health Informatics Services

Salam Everyone, I am King Faisal Hospital & Research Center

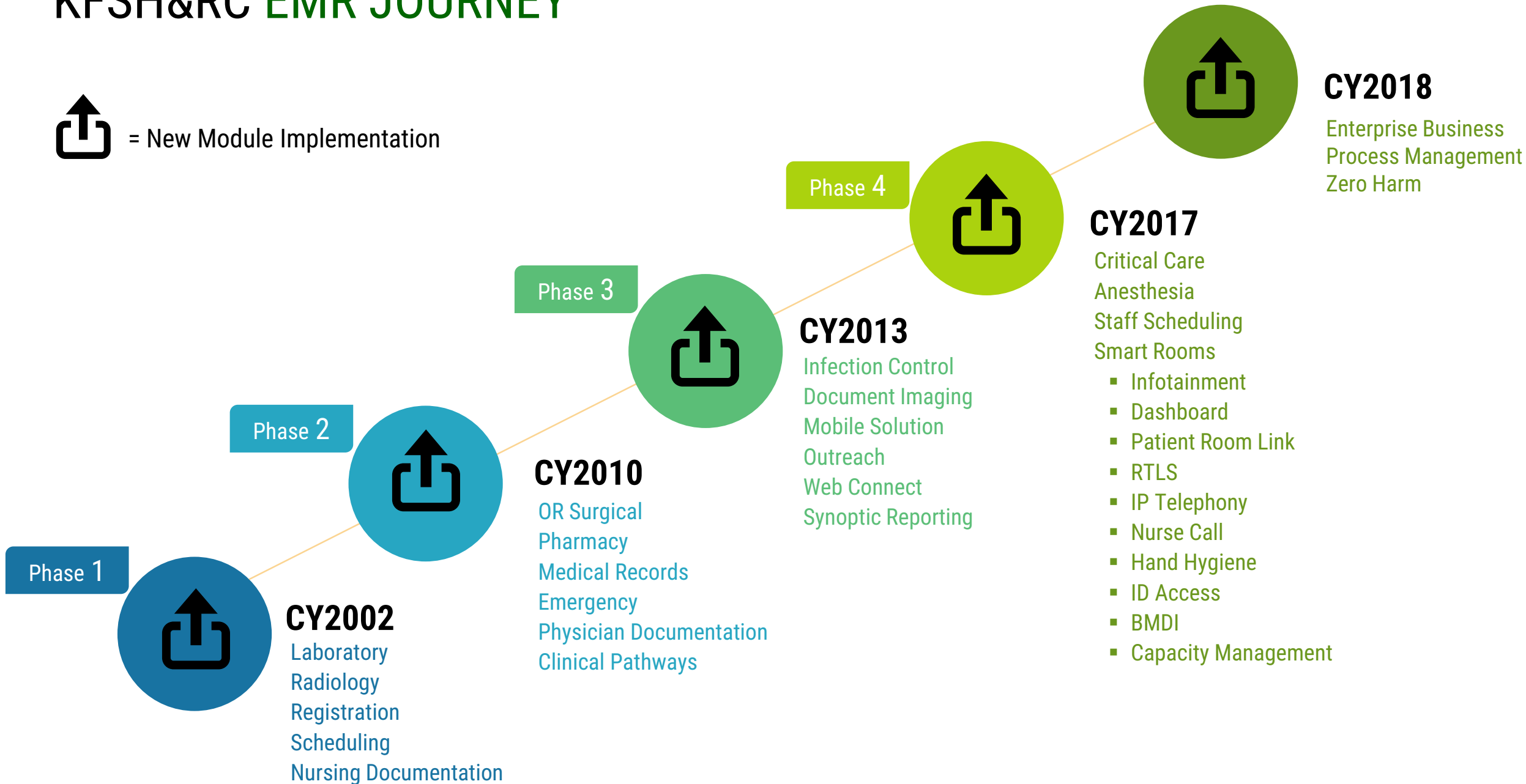
Bachelor of Science in Nursing
Master in Health Information System Management
George Mason University

King Faisal Specialist Hospital & Research Center

2018 – Present	Director Application & Health Informatics
2008 – 2018	Head of Health Informatics

KFSH&RC EMR JOURNEY

 = New Module Implementation



KFSH&RC EMR JOURNEY



= New Module Implementation



Phase 5



CY2020

Oncology
Organ Transplant
Women's Health
VNA Imaging
Revenue Cycle Management

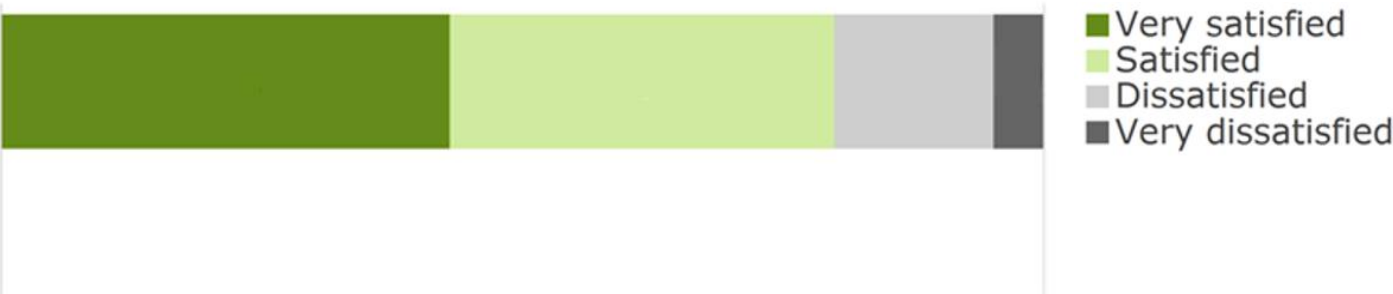


CY2019

HW Upgrade
SW Upgrade

KLAS EMR SATISFACTION

King Faisal



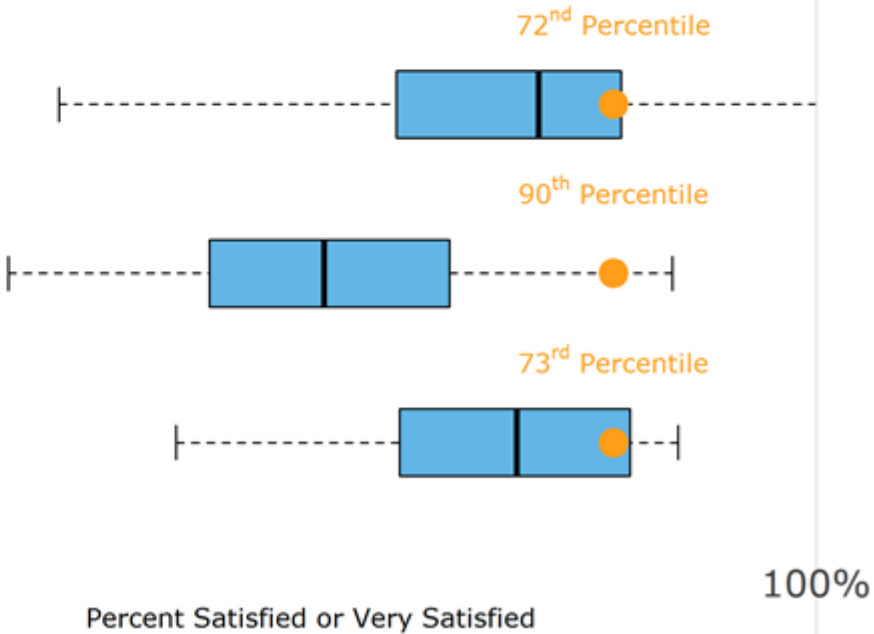
Overall EMR Satisfaction

All Clinicians (n=73,115)

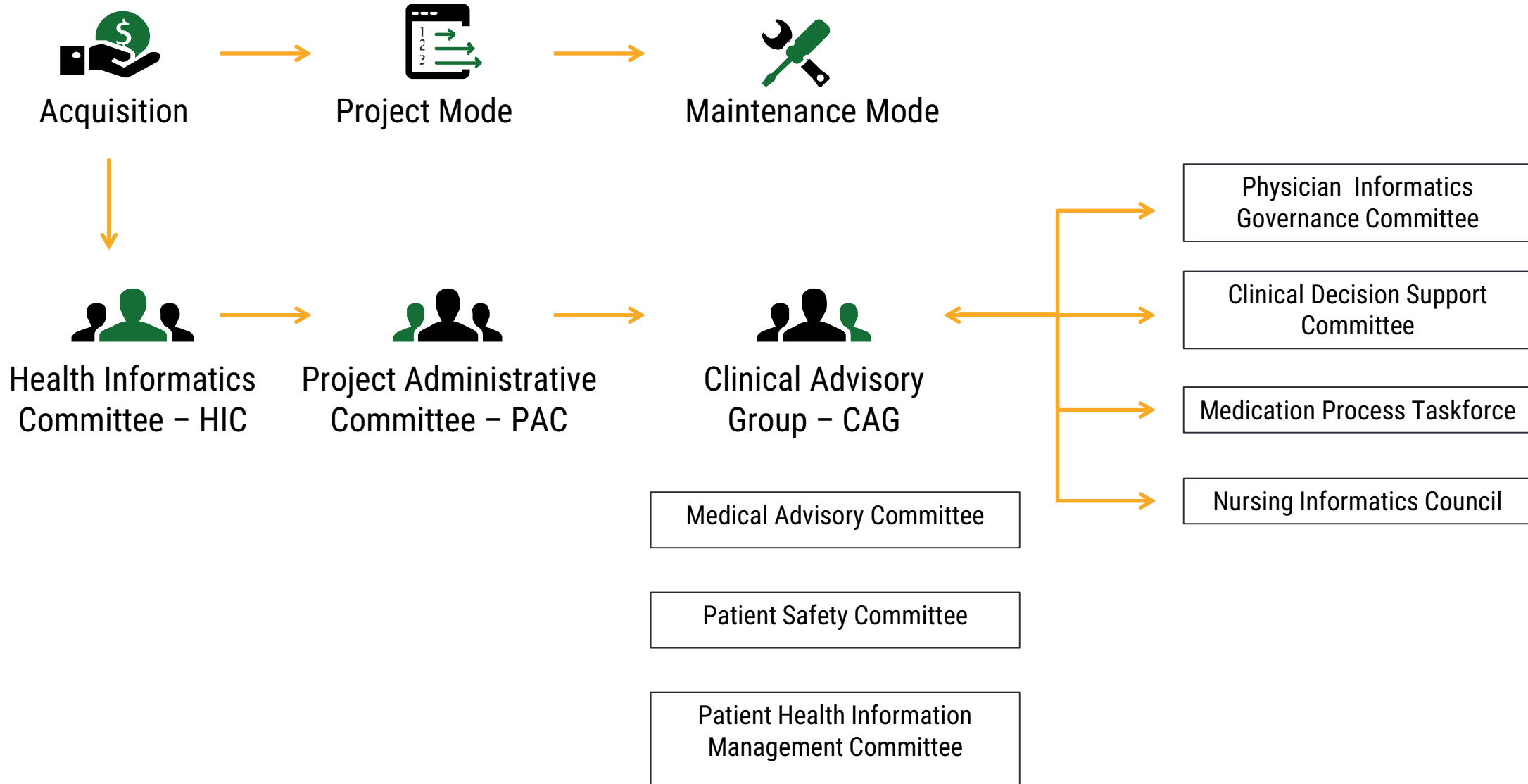
All Organizations (n=159)

Cerner Deployments (n=29)

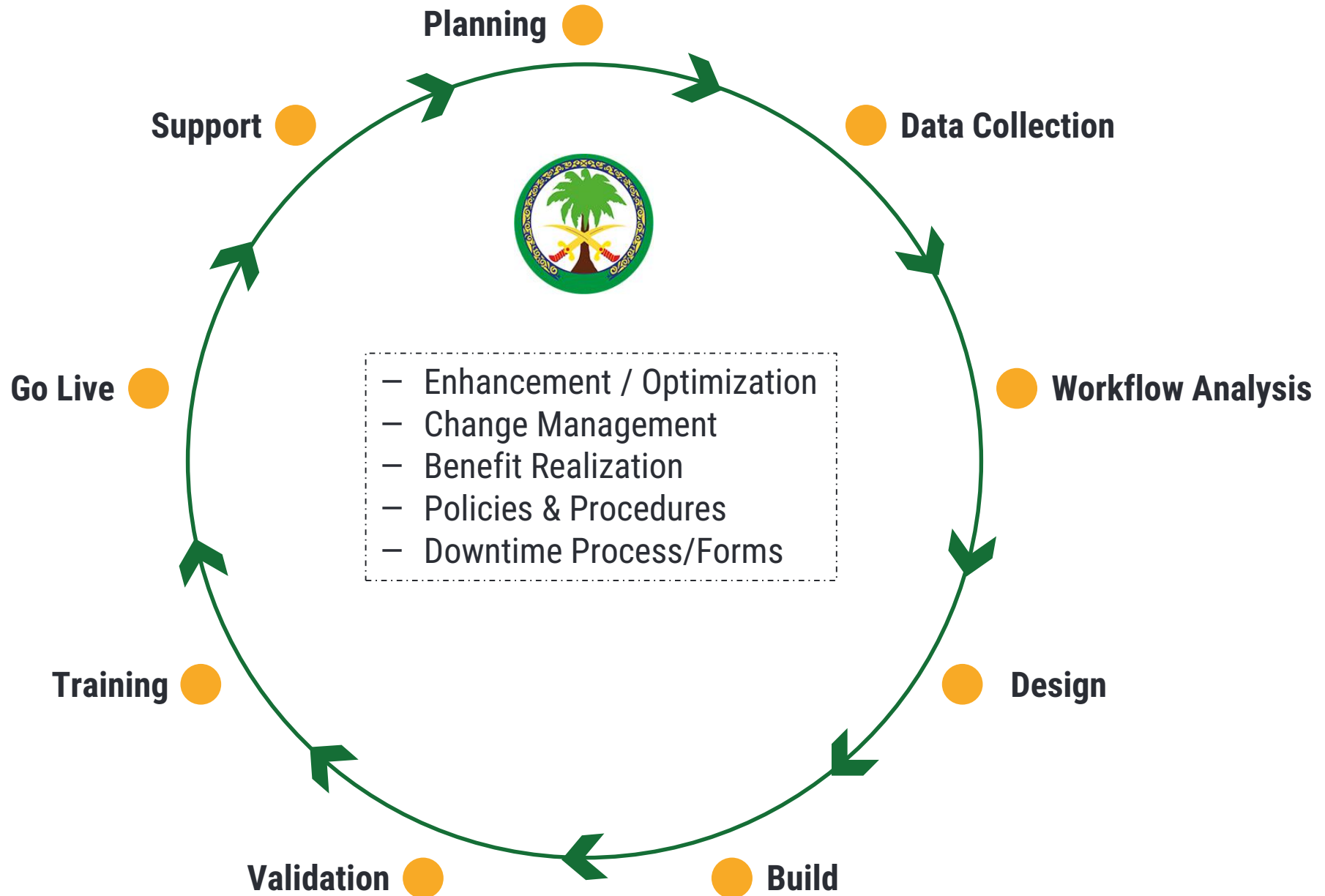
Non-US Health Systems (n=11)



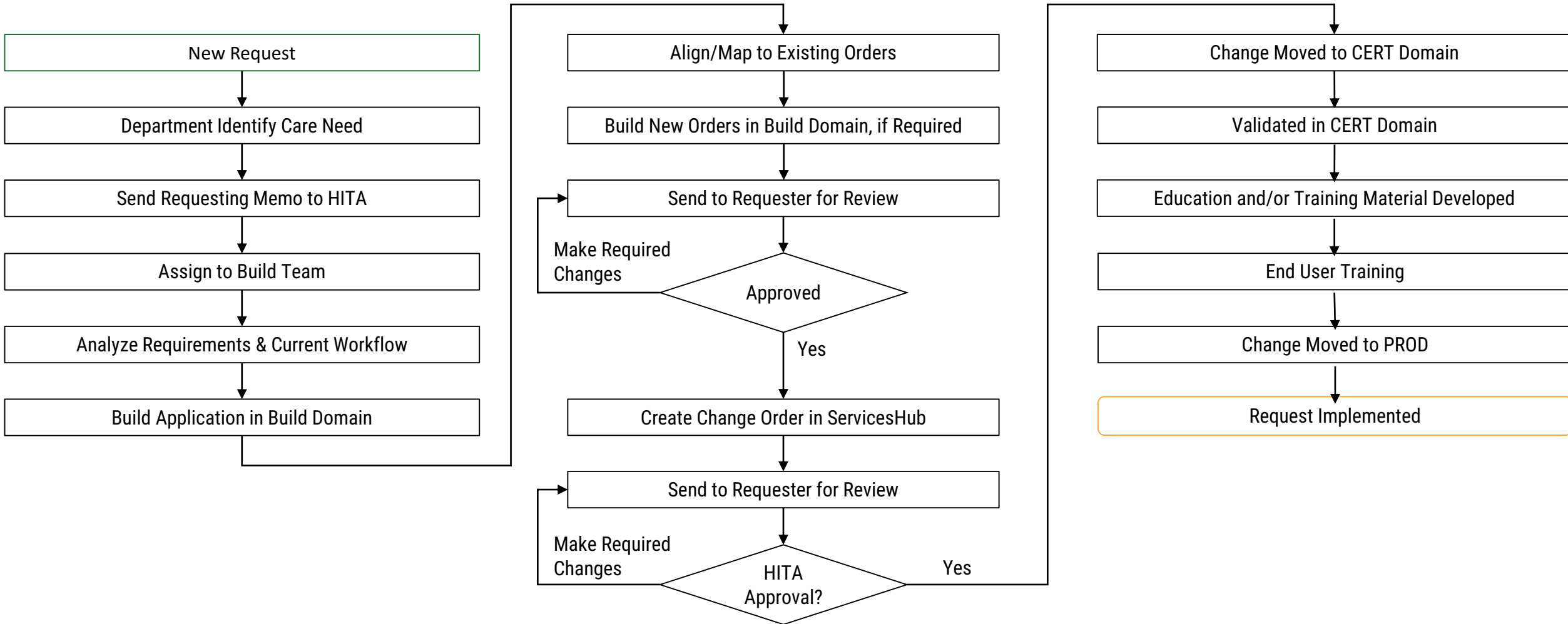
KFSH&RC EMR GOVERNANCE



IMPLEMENTATION METHODOLOGY



CHANGE CONTROL – PROCESS WORKFLOW





Adele Sandeman, RN

Application & Health Informatics Services – Senior Health Informatics Analyst

Salam Everyone, I am King Faisal Hospital & Research Center

Diploma in Nursing, ITIL Certified

King Faisal Specialist Hospital & Research Center

2002 – Present

Sr Health Informatics Analyst

ENABLER: HEALTH MAINTENANCE

Preventative Care is a Pillar of Family Medicine

- Use the EMR to help us provide preventative care
- Multi disciplinary team used to implement evidence based expectations



Adult/Travel Vaccines



BMD Screening



Mammogram Screening



Diabetes Screening



Fecal Occult Blood Screening



Lipid Screening



Obesity Screening



Pap Smear



Tobacco Counseling

DESIGN STRATEGY

CORE FACTORS

- Ease of Use
- Integration with our EHR
- Analytics to Measure Success & Opportunities
- Multi-Disciplinary Involvement

RULES

Does patient qualify for expectation?

- Gender
- Age
- Documented Problems
- Documented Procedures
- Documented Diagnosis
- Documented Results
- Orders

EXPECTATION

Addressed during Patient Visit

- System Generated
- Added Manually

SATISFIER

Expectation Completion

Satisfaction Periods:

- Orders = 14 days
- Results = defined period

Manual satisfiers:

- Done Elsewhere = satisfied
- Postponed = not satisfied
- Refused = not satisfied
- Cancelled = removed

IMPLEMENTATION METHODOLOGY



Formation of multidisciplinary team: Family Medicine Department Physicians & Nurses, Health Informatics, Information Technology, User Support, Training, Application Development & External Partners/Vendors



Developed the Health Maintenance Tab (HMT) within the EMR to incorporate government regulations & Family Medicine Department best practice and evidence based guidelines



Avoid Alert Fatigue by utilizing real time 'static' notifications: upon opening of patient chart, based on patient age, gender, documented results or known chronic problem/diseases



Interoperability with the current EMR utilizing existing solutions



Training & awareness campaigns targeting Clinicians on the importance of Preventive Medicine



Frequent reporting to ensure utilization and adoption

INTENDED OUTCOMES



Promote preventative healthcare outcomes



Standardization through the creation of preventive workflows within the EMR for targeted patients



Utilization of best practice guidelines supported by Government Regulations



Streamline the identification of patients who require screening



Develop a clinician friendly solution



Improve awareness of the importance of preventive medicine



Advanced analytics

ADOPTION



Buy-in from management through reinforced compliance



Awareness campaign and training of physician and nurses in groups and individual sessions



Training materials and pocket reference cards



Moved the Health Maintenance Tab as the first view in the EMR

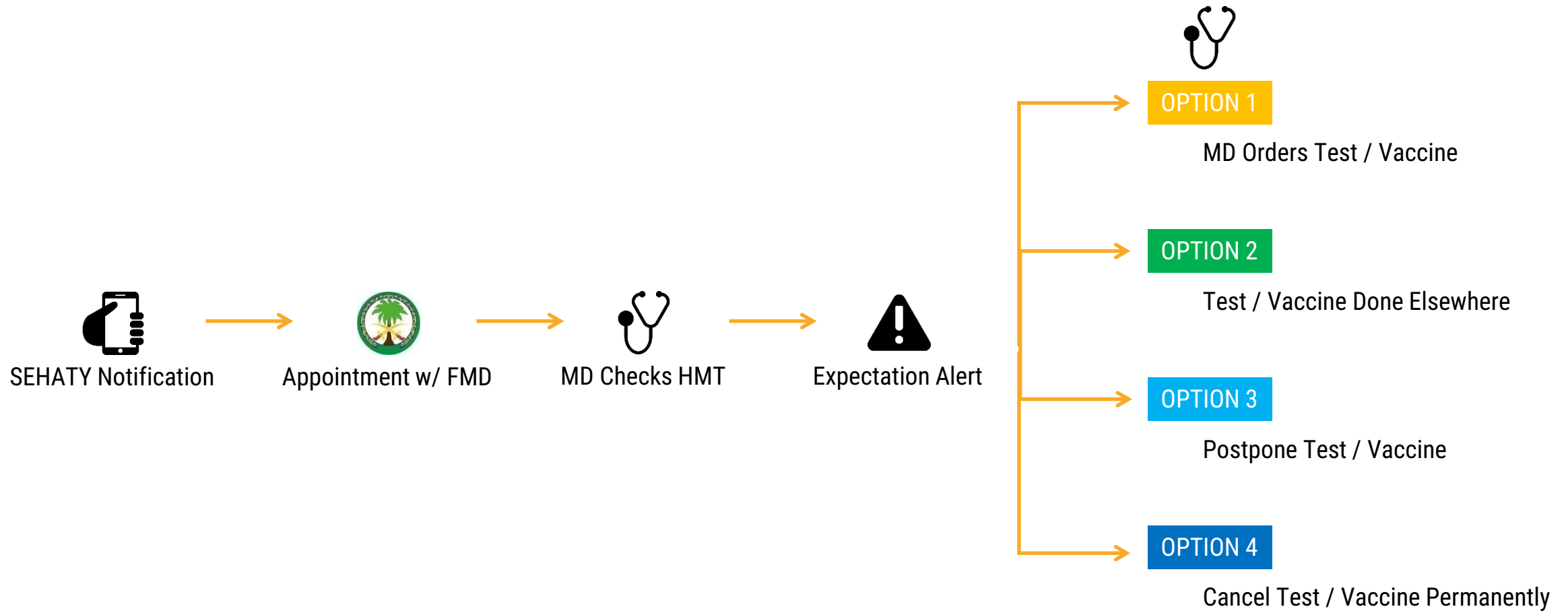


Running quarterly reports to check compliance & utilization



Having super users in the department for encouragement and support

HEALTH MAINTENANCE EXPERIENCE



CLINICAL INTELLIGENCE

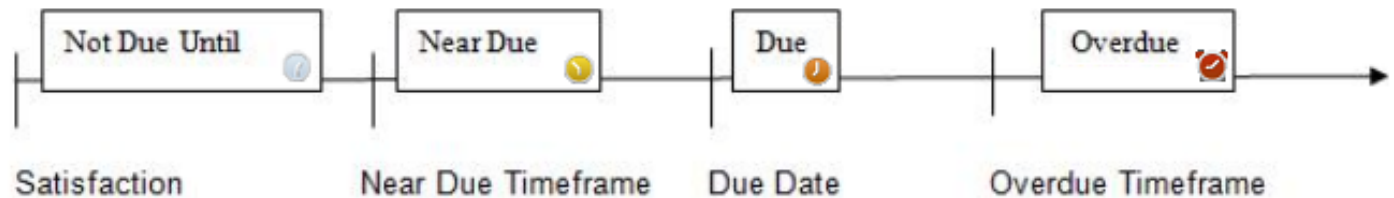
Disease related decision support is built into the HMT around age; gender and documentation for:

- Screening for Preventative Diseases
- Vaccination
- Recontracting

Future Development

- Chronic Disease Management
- Pediatric Clinic
- Well Baby Clinic

Standard Expectation (Refuse and Postpone actions will update status but the indicator will follow the below logic)



Pending Expectations + Add					Pr
	PPD	High	Overdue	15/01/2019	Q 1 Year(s)
	Hepatitis A Vaccine	Low	Overdue	28/02/2019	Q 186 Day(s)
	Varicella Vaccine	Low	Due	24/09/2019	Variable
	Typhoid Vaccine	Low	Due	24/09/2019	Variable
	Hepatitis B Vaccine	Low	Near Due	15/10/2019	Variable
	Breast Cancer Screening	Medium	Not Due Until	15/01/2020	Q 2 Week(s)
	Influenza Vaccine	Low	Not Due Until	15/04/2020	Q 1 Year(s)
	Meningococcal Polysaccharide Vaccine	Low	Not Due Until	14/01/2021	Q 3 Year(s)
	Pap Smear	Medium	Refused	25/08/2021	Q 3 Year(s)



SEHATY PATIENT PORTAL

- Patient able to view targeted screening based on age, gender, documented results or known chronic problem/diseases
- When last screening was performed
- Recommended frequency of screenings
- Active status of received Vaccines
- Immunization Chart
 - Immunizations given by KFSH&RC
 - Historical Vaccines given outside of KFSH&RC



Please schedule an appointment with your family physician for any health expectations that are due

Health Maintenance

HEALTH MAINTENANCE

Expectation	Frequency	Last Screening Date
Obesity Screening	Annually	05 August 2015
Lipid Screening	Every 3 Years	05 August 2015
Diabetes Screening	Annually	05 August 2015
Tobacco Counseling	Annually	
Pap Smear	Every 3 Years	

Immunization

MOH PATIENT IMMUNIZATION

OTHER IMMUNIZATION

Vaccine	Description	Taken Date
Influenza	Influenza Virus Vaccine, Inactivated	17 Oct 2018
MCV	Meningococcal Conjugate Vaccine	09 May 2018
Influenza	Influenza Virus Vaccine, Inactivated	18 Oct 2017
Influenza	Influenza Virus Vaccine, Inactivated	15 Nov 2016
Influenza	Influenza Virus Vaccine, Inactivated	12 Jan 2016



Muntazar Bashir, MD

Chairman Family Medicine – Chairman Integrated Clinical Information Committee – Jeddah

Salam Everyone, I am King Faisal Hospital & Research Center

Bachelor of Medicine & Surgery – Aberdeen, Scotland UK

Fellow of the Royal Australian College of General Practitioners

Fellow of the Royal College of Physicians, UK

Master in Business Administration (Distinction) – Maastricht School of Management

Certified Professional in Healthcare and Information Management Systems

King Faisal Specialist Hospital & Research Center – Jeddah

2006 – Present

Chairman & Consultant Family Medicine

2009 – Present

Chairman Integrated Clinical Information Systems Committee



Case Presentation

Population Health Realizations by Increasing Influenza Vaccination

FAMILY MEDICINE



55,000+ Employees & Eligible Dependents



Primary & Secondary Health Care Services

- Scheduled Clinic
- Walk-In Clinic



Tertiary Care Patients with Chronic Diseases



Pre Marital Screening



Pediatrics Care



Occupational Health Services



Support Service & Follow-up Treatment for ER



Nursing Clinic

- Pre Employment Screening
- Annual Re-Contract – All Employees
- Travel Medicine Clinic
- Well Baby Clinic
- Diabetic Clinic
- OB Screening Clinic
- Driver Assessment Clinic
- Nutrition Clinic



Occupational Health

- Food Handlers
- Needle Stick Injuries
- Tuberculosis Contacts & Converters
- Fit Testing
- Ergonomic Assessment of Workplace

LOCAL PROBLEM

ISSUE

Sub optimal performance in immunizing our patients against influenza

GOALS

- Identify the elements of preventative care that are evidence based & recommended according to age, gender, documented results and known chronic problems
- Utilize our EMR to help improve preventative care
- Provide proactive and preventative health management services to our patients



WHAT IS INFLUENZA



A contagious infection caused by viruses that infect the upper, and occasionally the lower respiratory tract ¹



Can cause severe disease that may cause patients to be admitted to hospital and can also result in death



According to the Centers for Disease Control (CDC), since 2010 in the US there have been up to 960,000 hospitalizations and up to 79,000 deaths every year ²



People who are otherwise fit and well can also catch influenza and pass the virus onto sick patients ³



In some states in the United States it is mandatory for healthcare workers to get the influenza vaccine

1. <https://www.cdc.gov/flu/about/keyfacts.htm>
2. <https://www.cdc.gov/flu/about/burden/index.htm>
3. <https://www.moh.gov.sa/CCC/healthp/regulations/Documents/ISSA%20Protocol.pdf>

WHY KFSH&RC PRIORTIZED THIS ISSUE



Seasonal influenza occurs in the coldest time of the year, in the Northern and Southern hemispheres respectively, but it occurs all year around in the subtropics and tropics (e.g. Saudi Arabia) ⁴



Saudi Arabia has millions of pilgrims coming from all over the world, all year around, with the potential to bring infections



Being a tertiary care hospital, all of our patients are vulnerable to infectious diseases



Global strategy to decrease the chance of a Pandemic ⁵

4. <https://www.who.int/bulletin/volumes>

5. <https://www.who.int/influenza/spotlight>

MASS GATHERING MEDICINE

DEFINITION

Health effects/risks of mass gatherings and the strategies that contribute positively to effective health services delivery during these events ⁶

KSA MASS GATHERING

- The Lancet Conference on Mass Gatherings Medicine
October 23–25, 2010
Jeddah, Saudi Arabia
- Hajj Pilgrimage occurs over 5 days during the final month of the Islamic calendar and attracts 2–3 million visitors
- Hajj Pilgrimage stretches the capacity—including that for shelter, provision of food and water, waste management, physical security, and health care ⁷
- Umrah (Lesser Pilgrimage) CY2018 saw 18.3 million performers throughout the year – 6.8 million external



MAJOR HAJJ PILGRIMAGE HEALTH RISKS 8

HEALTH RISKS

Influenza viruses
Coronaviruses
Pneumococcal sepsis
Tuberculosis
Meningococcal sepsis
Polio
Yellow fever
Gastrointestinal infections
Acute gastroenteritis
Food poisoning
Cholera, typhoid & dysentery
Viral diarrhoea
Viral hepatitis B, C, D and E
Arbovirus infections
Parasitic
Fungal
Blood-borne disease
HIV
Bacterial
Zoonosis
Brucellosis
Leishmaniasis

HEALTH RELATED DISORDERS

Skin milia
Heat hyperpyrexia
Heat Stroke

PREVENTION

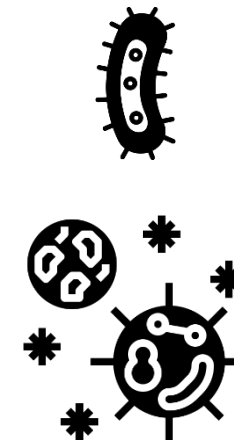
Vaccination (before travelling and at port of entry)

ADVICE

Health education leaflets and posters
General education about hygiene, hydration, shelter from direct heat and seeking and accessing health services

SPECIAL PRECAUTIONS

Sterile shaving blades should be used for the head-shaving ceremony
Pilgrims with comorbidities or on immunosuppressive agents are more likely to acquire and succumb to infectious diseases
As new infectious disease threats emerge, recommendations are updated on a regular basis



HEALTH MAINTENANCE TAB

Health Maintenance (Ages 19 and older)

Full screen

Print

1 minutes

Pending Expectations

Add

Present – August 2022

Show satisfiers

Sort by:

Due Indicator

Influenza Vaccine

Low

Near Due

14/10/2019

Q 1 Year(s)

Last Satisfied By: ALGHAMDI, FARIS 14/10/2018

Influenza Order

Done Elsewhere

Postponed

Refused

Cancel Permanently

PPD

High

Near Due

16/10/2019

Q 1 Year(s)

Last Satisfied By: ALHAMOUD, HANADI 16/10/2018

Sign Orders

Typhoid

Order

Done Elsewhere

Postponed

Refused

Cancel Permanently

Herpes Zoster Vaccine

Low

Due

04/08/2019

Variable

Herpes Zoster Order

Done Elsewhere

Postponed

Refused

Cancelled Permanently

Prevnar 13-valent

Low

Due

04/08/2019

Variable

Prevnar 13-valent Order

Done Elsewhere

Postponed

Refused

Cancel Permanently

Recently Satisfied Expectations

August 2009 – Present

Show all canceled records

Expectation

Status

Satisfy Type

Administration Date

Satisfy Reason

Priority

Last Satisfied By

Approximate Du...

Comments

Typhoid Vaccine

Typhoid Vaccine

Hepatitis A Vaccine

Hepatitis A Vaccine

Hepatitis A Vaccine

PPD

Influenza Vaccine

Influenza Vaccine

Influenza Vaccine

Influenza Vaccine

Influenza Vaccine

Other Satisfier

Satisfied

Canceled

Other Satisfier

Satisfied

Satisfied

Satisfied

Other Satisfier

Undone

Other Satisfier

Satisfied

Postponed

Order

Result

Manual

Order

Result

Result

Result

Result

Order

Order

Order

Result

Manual

22/06/2015

22/06/2015

15/01/2018

22/12/2015

22/06/2015

16/10/2018

14/10/2018

14/10/2018

17/01/2018

12/10/2016

12/10/2016

29/10/2015

Immune - Blood test

Other

Low

Low

Low

Low

Low

High

Low

Low

Low

Low

Low

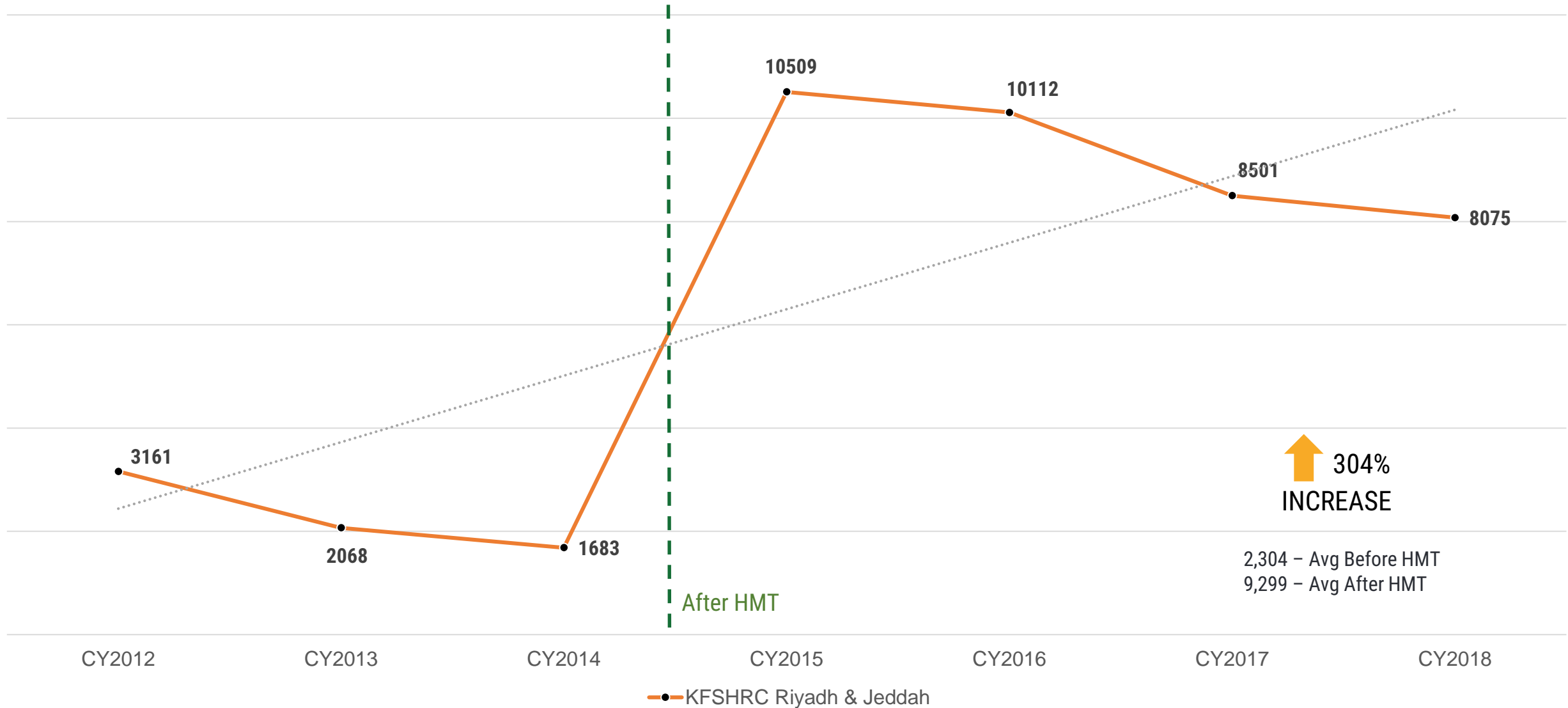
Carbonel, Maribel...

Bawingan, Caden...

04/09/2016

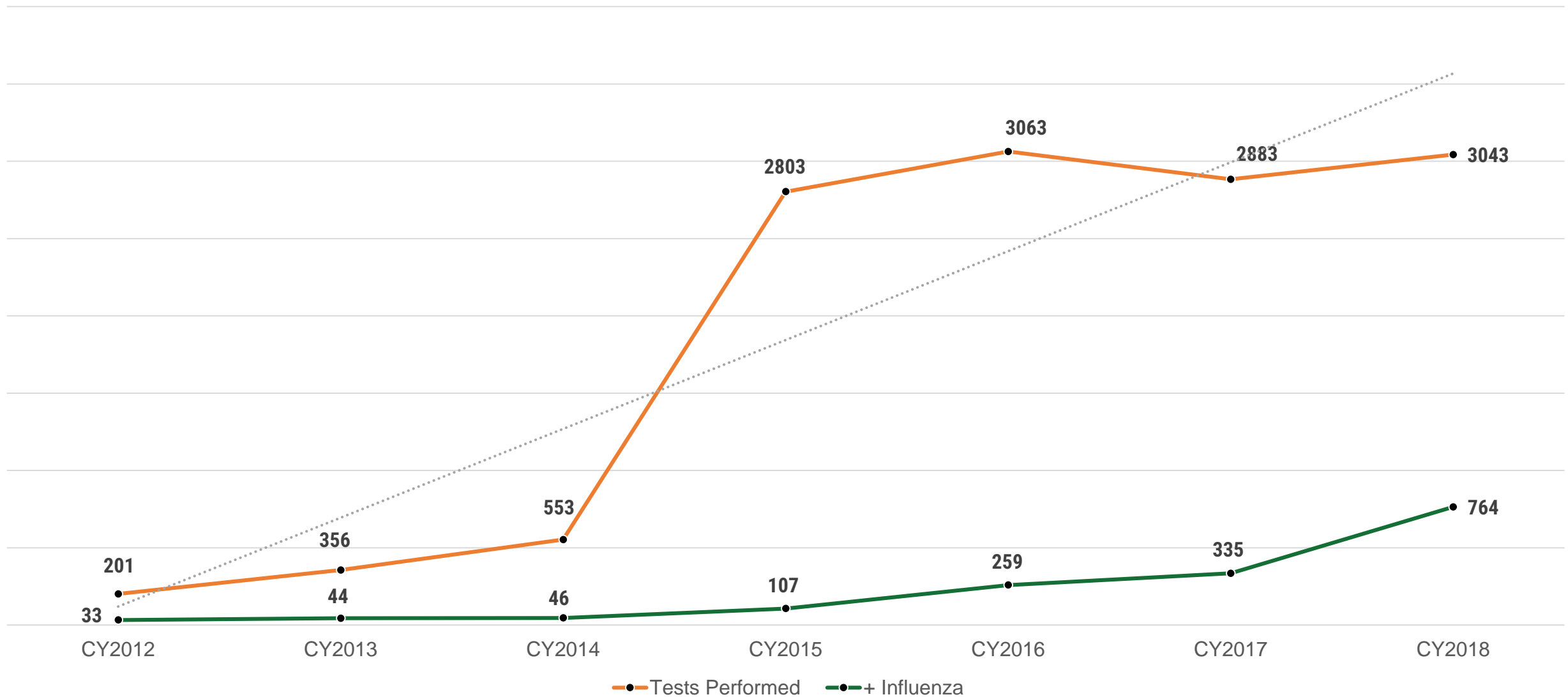
VALUE DERIVED

Administration of Flu Vaccine by Family Medicine



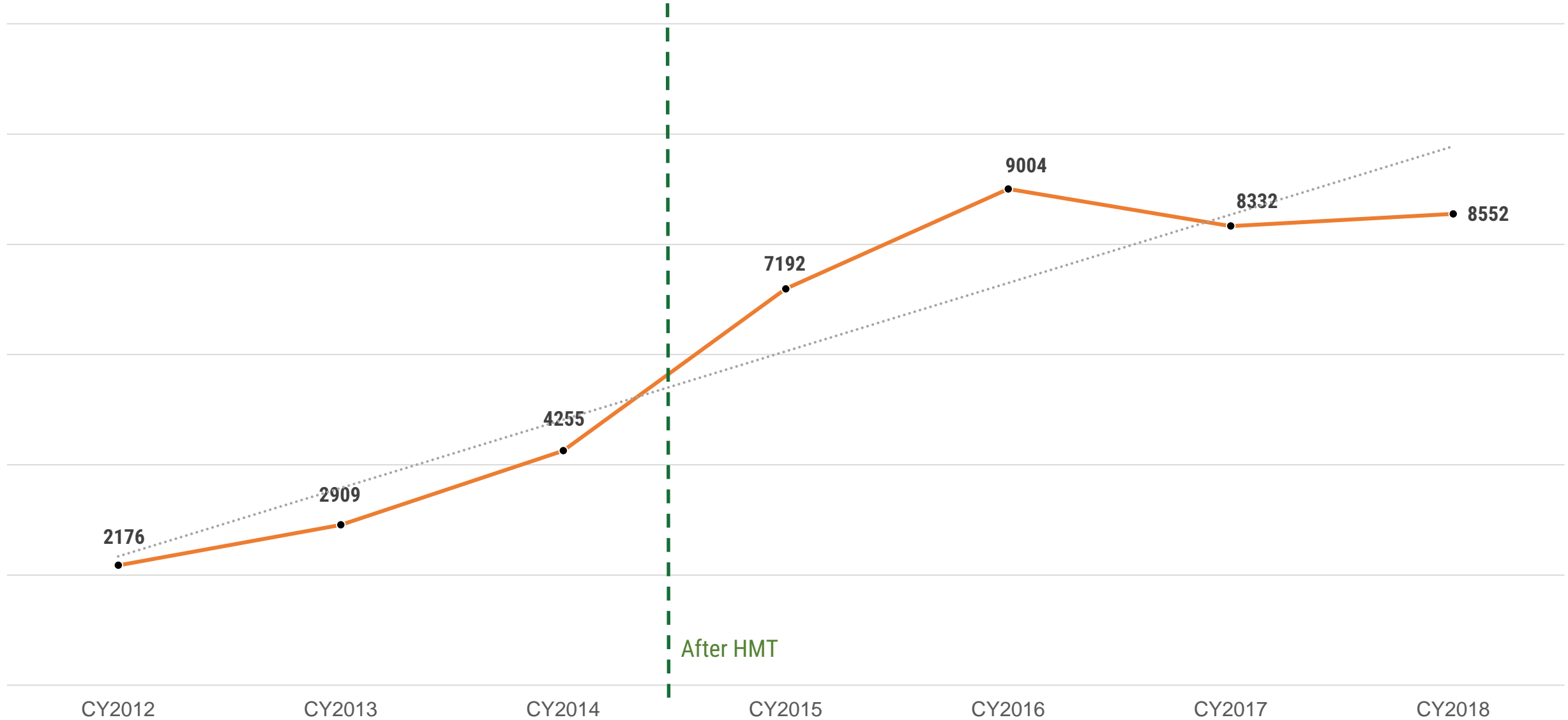
VALUE DERIVED

+ Influenza Tests



VALUE DERIVED

Tamiflu Dispensed



INTERNATIONAL STANDARDS ALIGNMENT

Joint Commission Recommendation

Provide a safer environment for Health Care Personnel and Patients through Influenza Vaccination.

Key Points for Practice (AFP Editors)

Vaccination should be offered by the end of October, although vaccine administered in December or later is likely beneficial in most influenza seasons.

CDC Recommendation

Routine annual influenza vaccination is recommended for all persons aged ≥ 6 months who do not have contraindications. Optimally, vaccination should occur before onset of influenza activity in the community.



KFSH&RC Standards

- Flu vaccinations are given annually between October and March
- Flu vaccines also given during Hajj period annually

LEARNINGS

SUCCESS

- Enterprise wide standardization of preventative care for Influenza
- Improved alert monitoring to minimize alert fatigue
- Inclusion of clinicians in the build and design decisions optimized the workflow and improved adoption
- Engaging leadership from the start, helped to drive accountability and utilization

CHALLENGE

- Change management
- Facility specific workflows while using the same tools
- Post go-live support of two remote facilities

OPPORTUNITY

- Improving documentation compliance
 - Cost
 - Incidence Levels
 - Mortality & Morbidity



KEY TAKEAWAYS

وَمَنْ أَحْيَاهَا فَكَأَنَّمَا أَحْيَا النَّاسَ جَمِيعًا

Whoever saves one life - it is as if he had saved mankind entirely

Surah Al Ma'idah 5:32



Aligns with KSA Vision 2030
Aligns KFSH&RC Mission & Vision



Strengthen relationship with Partners



Ability to benchmark KFSH&RC healthcare delivery model



Staff development & growth



International & National brand recognition



مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
————— مؤسسة عامة. Gen. Org. —————