



*Thames Valley*

**Family Health Team**

# **Shadow Coding: Enhancing Performance and Service Delivery Through Digital Health Tools**

Kelly McConnell, MA, Quality Coordinator &  
Jillian Leslie, BSc, Data Analyst

October 24, 2023

AFHTO Conference

# Presenter Disclosure

- **Presenters:** Kelly McConnell and Jillian Leslie
- **Relationships with financial sponsors:** None
- **Disclosure of Financial Support:**
  - These speakers have received no financial support, other than employment:
    - Full-time employees of Thames Valley Family Health Team
  - These speakers have received no in-kind support



# Presenter Disclosure

- **Mitigating Potential Bias**

- Potential for conflict(s) of interest:

PS Suite EMR and Accuro EMR will be discussed in this program strictly for showcasing the research and results found. We are not advocating for or advertising the use of these programs, but merely reporting research findings. We are not being compensated in anyway by these programs/vendors.



# Learning Objectives

- Benefits of leveraging specific EMR features as a digital health tool for data collection (specifically Accuro and PS Suite)
- Demonstrate a solution for streamlining data standardization
- Demonstrate a simplified method for enhancing the quality and quantity of data collected
- How extracting meaningful data in an efficient way can enhance reporting and QI initiatives
- How to embrace a culture of continuous improvement through a Performance Management system, and unify an approach to successful delivery of strategic directions
- Understand challenges encountered throughout implementation process, and recognize future potential use for shadow coding within a Family Health Team



# Origins of Shadow Coding

- Former system for data collection: FHTStats (StatsTracker), captured a single presenting problem, data met ministry requirements but had limited use/function beyond that
- Needed a more efficient way to reflect day-to-day clinical work, supporting decision making, understanding FHT impact and patient outcomes
- Shadow coding (shadow billing) leverages EMR bill book to enter patient care data; already happening at other FHTs



# Purpose and Projected Benefits

- More accurate picture of **scope of work** and **unique patient populations** being served within primary care
- Offered significant **operational efficiencies** for QI team (Ministry reporting, program evaluation)
- **Decreased admin burden** for clinicians
- Allowed for the establishment of a comprehensive quantitative performance management system
- Supports Strategic Directions and unifies broader team's effort towards strategic direction delivery
- Data set for Performance Management and Balanced Scorecard



# Project Implementation

- Go-live: October 2021
- Collaboration between QI, Leadership and clinicians to ultimately develop a standardized, efficient means of capturing meaningful quality measures



[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)



Thames Valley  
Family Health Team

# TVFHT Shadow Codes

- Comprehensive profession-specific lists created with direct input from clinical teams
- Codes are alphanumeric: alpha = type of encounter, numeric = applicable diagnoses/activities/interventions.
- Encounter Types

**DIRECT PATIENT CARE:** IP – In-Person Encounter

VV – Virtual Visit

HV – Home Visit

**INDIRECT PATIENT CARE:** SN – System Navigation

AD – Administrative

CO – Consult

**REFERRALS:**

IR – Internal Referral

XR – External Referral





# TVFHT Shadow Codes cont'd

- Numeric portion – Categories:

**Acute/Episodic**

**Chronic Disease Management**

**Health Promotion and Prevention**

**Intervention (OT)**

**Patient Education**

**Pharmacist Specific**

**Procedure**

**Programs/Groups**



# TVFHT Shadow Codes cont'd

- Examples:

1) **IP230** = in-person (IP) visit, depression (230)

2) **CO478** = consult (CO), TVFHT – Physician (478)

3) **XR506** = external referral (XR), Ontario Structured Psychotherapy (506)

- Add further meaning to some codes by utilizing quantity section to represent numbers, scores, concepts, etc.

4) **VV264 – 10** = virtual visit (VV), PHQ-9 (264), score of 10 (10)

5) **IP224 – 2** = in-person (IP) visit, CHF (224), existing diagnosis (2)

6) **IR765 – 2** = internal referral (IR) to Mind Over Mood group (765), patient accepted the referral (2)



# Training, Ongoing Work


- Profession-specific training – patient scenarios, practice coding together as a team (ongoing work to ensure consistency, standardization)
- EMR-specific training and 1:1 support
- Training resources available via Microsoft Teams



# Shadow Coding in PS Suite

TVFHT Shadow Coding - Nursing (ALL CODES) ✕

File



Thames Valley  
Family Health Team

**Nursing**  
**Shadow Code Sheet - ALL CODES**  
Use shadow codes from prior service

<b>Service book</b>	TVFHT Service Tracker	20	<input type="button" value="Generate Bill"/>
<b>Service date</b>	<input type="text" value="Sep 18, 2023"/>		
<b>Service description</b>	<input type="text" value="Service Tracker"/>	<b>Service referred to</b>	<input type="text"/>
<b>Service provider</b>	<input type="text" value="KE"/> Name Kelly McConnell	Role	Administrator

[show all](#) [hide all](#)

---

**Acute/Episodic**  
**Chronic Disease Management**  
**Health Promotion and Prevention**  
**Patient Education**  
**Procedure**  
**Programs/Groups**

[Find Code...](#) 2023-08-14



# Shadow Coding in PS Suite cont'd

TVFHT Shadow Coding - Nursing (ALL CODES)

File

<b>Diabetes</b>	<input type="checkbox"/> IP232	<input type="checkbox"/> VV232	<input type="checkbox"/> HV232	<input type="checkbox"/> SN232	<input type="checkbox"/> AD232	<input type="checkbox"/> CO232	<input type="checkbox"/> XR232
<b>Eating Disorder – unspecified</b>	<input type="checkbox"/> IP237	<input type="checkbox"/> VV237					<input type="checkbox"/> XR237
<b>Foot care</b>	<input type="checkbox"/> IP238	<input type="checkbox"/> VV238	<input type="checkbox"/> HV238	<input type="checkbox"/> SN238		<input type="checkbox"/> CO238	<input type="checkbox"/> XR238
<b>Foot care padding/strapping/ed</b>	<input type="checkbox"/> IP423	<input type="checkbox"/> VV423	<input type="checkbox"/> HV423		<input type="checkbox"/> AD423		
<b>GAD-7 (value)</b>	<input type="checkbox"/> IP240	<input type="checkbox"/> VV240	<input type="checkbox"/> HV240		<input type="checkbox"/> AD240		
<i>Specify the score (value). It will default to 1. For a score of 0, use 100. (The EMR will not allow you to enter a quantity of 0).</i>							
<i>If patient refuses or screener is incomplete or invalid, use 99.</i>							
<b>Geriatric Depression Scale</b>	<input type="checkbox"/> IP295	<input type="checkbox"/> VV295	<input type="checkbox"/> HV295		<input type="checkbox"/> AD295		
<i>Specify the score (value). It will default to 1. For a score of 0, use 100. (The EMR will not allow you to enter a quantity of 0).</i>							
<i>If patient refuses or screener is incomplete or invalid, use 99.</i>							
<b>GI Disease/Issue</b>	<input type="checkbox"/> IP241	<input type="checkbox"/> VV241			<input type="checkbox"/> AD241	<input type="checkbox"/> CO241	
<b>Hypertension</b>	<input type="checkbox"/> IP242	<input type="checkbox"/> VV242	<input type="checkbox"/> HV242	<input type="checkbox"/> SN242	<input type="checkbox"/> AD242	<input type="checkbox"/> CO242	<input type="checkbox"/> XR242
<b>Malnutrition</b>	<input type="checkbox"/> IP247	<input type="checkbox"/> VV247			<input type="checkbox"/> AD247	<input type="checkbox"/> CO247	
<b>Mental Health - other/unknown</b>	<input type="checkbox"/> IP248	<input type="checkbox"/> VV248	<input type="checkbox"/> HV248				<input type="checkbox"/> XR248
<b>Mental health and addictions</b>				<input type="checkbox"/> SN278	<input type="checkbox"/> AD278	<input type="checkbox"/> CO278	
<b>Osteoporosis/bone health</b>	<input type="checkbox"/> IP257	<input type="checkbox"/> VV257	<input type="checkbox"/> HV257	<input type="checkbox"/> SN257	<input type="checkbox"/> AD257	<input type="checkbox"/> CO257	<input type="checkbox"/> XR257
<b>Palliative care</b>	<input type="checkbox"/> IP259	<input type="checkbox"/> VV259	<input type="checkbox"/> HV259	<input type="checkbox"/> SN259	<input type="checkbox"/> AD259	<input type="checkbox"/> CO259	<input type="checkbox"/> XR259

Discard



# Shadow Coding in PS Suite cont'd

**Billing doctor:** TVFHT Service Tracker, 000001

**Bill to:**  MOH  WSIB  Patient  Other  Non-Professional

---

**Institution:**

**Admission:**

**Patient name/#:** Test, Test  
#22468 2018/01/01

---

**Details/diagnosis:** Service Tracker

**SLI:**

**Services Provided**

Code	Description	Date	Diag	#	Fee
O241A	GI Disease/Issue	Sep 18, 2023	1100	1	0.01
O265A	Prediabetes	Sep 18, 2023	1100	1	0.01
O768A	Sweet Talk	Sep 18, 2023	1107	1	0.01

Manual review requested  WSIB

**Comments:** KE

No recall  1 mo  2 mo  3 mo  4 mo  6 mo  1 yr  2 yr

**Total:** 0.03

**Paid To Date:**

Edit Cancel Save & Add Save Close



# Shadow Coding in Accuro

Claim Details "BATCH BILLING ENABLED"

Batch Billing  Claim Indicators

Batch Billing Settings

Health # Express

DOB

Health # Version Code Override

Claim Details

Date of Service: 03/02/2020 Mon

Admission Date: MM/DD/YYYY Mon

Provider: Larkin, Michael

Waste Number: None

Group Number: \*

SU: None

Referred By: --None--

Procedure	Suffix	Diagnosis	Practitioner #	Insurer	Qty	NC	Amount	Paid	%	Revised
0	A	0		TvFHT Tracking	1	<input type="checkbox"/>	\$0.00	\$0.00	100	<input type="checkbox"/>

Procedure	Suffix	Diagnosis	Practitioner #	Insurer	Qty	NC	Amount	Paid	%
P200	A	0		TvFHT Tracking	1	<input type="checkbox"/>	\$0.00	\$0.00	100
VV752	A	0		TvFHT Tracking	1	<input type="checkbox"/>	\$0.00	\$0.00	100
AD156	A	0		TvFHT Tracking	1	<input type="checkbox"/>	\$0.00	\$0.00	100



# Raw Data - Sample

	A	B	C	D	E	F	G	
1	Clinic Id	Service Da	Professio	Billed By	Patient Id	TVFHT Servi	Service Q	
2	450	3-Apr-23	NP	Provider Name	Patient Id	VV128	1	
3	450	3-Apr-23	NP	Provider Name	Patient Id	VV424	1	
4	450	3-Apr-23	NP	Provider Name	Patient Id	VV438	1	
5	450	3-Apr-23	NP	Provider Name	Patient Id	VV440	1	
6	450	3-Apr-23	NP	Provider Name	Patient Id	XR499	1	
7	450	3-Apr-23	NP	Provider Name	Patient Id	VV662	1	
8	450	3-Apr-23	RN	Provider Name	Patient Id	IP727	1	
9	450	3-Apr-23	RN	Provider Name	Patient Id	IP248	1	

Navigation: < > ALL STAFF | FCRN | HRM RN | MHC | NP | O ... (+) <





# Shadow Code Data and Ministry Reporting

Pharmacy Services	Interventions reviewed Site Allegations on	1) Number of medication reconciliations completed (partial/complete) 2) Number of academic activities completed	1) 500 2) 100	1) 352 2) 0	1) 260 2) 0	0	0	1) 616 2) 0	Shadow Coding Indicator #1- 439 and 704 Indicator #2- CO700 (need to look at qty)
Occupational Therapy Services	Group ride Reducing the waiting in c assess ing	1) Number of visits for Falls Prevention 2) Number of cognitive screenings completed 3) Number of driving screens completed	1) 400 2) 300 3) 50	1) 90 2) 92 3) 19	1) 101 2) 114 3) 26	0	0	1) 191 2) 206 3) 45	Shadow Coding Indicator #1- 656 and group code 757; Indicator #2- 415 and 441; Indicator #3- 602
Mental Health Services	Interventions ers to are ossible	1) Number of RAMs completed 2) Collaboration with community resources (external partners)	1) 1500 2) 350	1) 419 2) 755	1) 405 2) 570	0	0	1) 824 2) 1325	Shadow Coding Indicator #1- 456 (check MH and RN sheets); Indicator #2- any XR code on the MH sheet
Dietitian Services	Interventions tion to ers	1) Number of malnutrition visits 2) Number of diabetes/pre-diabetes visits	1) 250 2) 750	1) 108 2) 474	1) 79 2) 441	0	0	1) 187 2) 915	Shadow Coding Indicator #1- 247 Indicator #2- 232 and 265
Primary Care Services	Podic care	1) Percentage of patients able to access primary care within 24-48 hours on a routine basis 2) Percentage of appropriate patient visits delivered through virtual tools (telephone/video) 3) Percentage of appropriate patient	1) 50% 2) 75% 3) 25%	1) 31% 2) 46.8% 3) 53.1%	1) 33.9% 2) 36.5% 3) 42%	0	0	1) 32.5% 2) 41.7% 3) 47.6%	Indicator #1- Access reports which is physicians, NP, and RN. First count the number of tracking times for those three profession, then sort the days column to only show 0 or 1. Divide that number by the number of total tracking entries  Indicator #2- Look at number of WV codes (remove duplicates)  Indicator #3- Look at number of IP codes (remove duplicates)
Preventive Care	Charts to lity on on the es, paps, enings	1) Number of PAPs completed 2) Number of immunizations 3) Number of cancer screenings completed (excluding paps)	1) 2000 2) 3500 3) 1000	1) 201 2) 969 3) 91	1) 548 2) 1810 3) 200	0	0	1) 749 2) 2779 3) 291	Shadow Coding- NPs and Nursing  Indicator #1- 445 Indicator #2- 429 (look at quantity) Indicator #3- 412



# Shadow Code Data and Ministry Reporting

1	<b>Category</b>					
2						
3	<b>Acute &amp; Episodic Care Services</b>					
4		103	108	111	128	<b>TOTAL</b>
5	Core primary care services provided in response to an acute or episodic illness or during a general health assessment (e.g. treatment, consultation, general medication assessment, etc.)					0
6						
7	<b>PLANNED CARE</b>					
8						
9	<b>Chronic Disease Management Programs</b>					
10	A planned approach to care with documented, clear objectives and defined roles for providers, that focuses on maintaining the health of individuals with chronic conditions, delaying progression of their conditions, and preventing complications.					
11		217	<b>TOTAL</b>			
12	Asthma		0			
13		229	<b>TOTAL</b>			
14	COPD		0			
15		222	<b>TOTAL</b>			
16	Cardiovascular Disease		0			
17		224	<b>TOTAL</b>			
18	Congestive Heart Failure		0			
19		242	<b>TOTAL</b>			
20	Hypertension		0			
21		232	<b>TOTAL</b>			
22	Diabetes		0			



# Ministry Reporting – Before and After

<b>Schedule E - Summary of Programs and Services</b>	<b>Q4 2021</b>	<b>Q4 2022</b> <i>(2nd full quarter of shadow coding)</i>
Acute/Episodic	7464	7315
Chronic Disease Management	11748	17968
Health Promotion and Prevention	7563	19998
<b>Total # of patient visits</b>	<b>26775</b>	<b>45281</b>



# Shadow Code Data and Performance Management

- QI team uses shadow codes to provide quarterly Key Performance Indicator (KPI) data to each clinician to support performance touchpoint meetings
- Data is reviewed by employee and supervisor to identify successes within clinician's practice and opportunities for improvement
- Supporting a culture of accountability



# Performance Metrics – Key Performance Indicators

<b>KPI: IHP Collaboration and Referrals</b>	IR or CO: 475, 476, 477, 478, 479, 480, 481, 482, 483; CO351
---	--

<b>KPI: Substance Use Discussion at Initial Encounter</b>	IP, VV: 285 - 2
---	-----------------

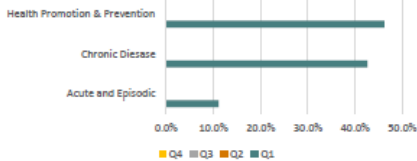
<b>KPI: Patient complexity score</b>	<b>Total Use of Code</b>	All 706
	# of Level 1	
	# of Level 2	
	# of Level 3	



# Shadow Code Data and Balanced Score Card

## Clinical Outcomes

### Nurse Practitioner - Types of Care



**822**

Number of Referrals to External Partners made by Mental Health Counsellors in Q1

**5.8**

Average number of days for Mental Health Intake Appointments for Q1



**966**

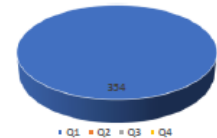
Number of Medication Assessments completed by Pharmacists YTD

**398**

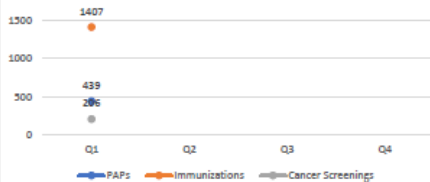
Number of Medication Reconciliations completed by Pharmacists YTD



Number of patients presenting with Diabetes/Pre-Diabetes cared for by Registered Dietitians



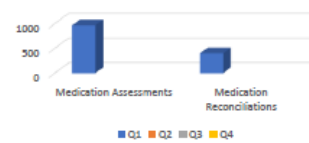
### Nurse Practitioner Preventative Care



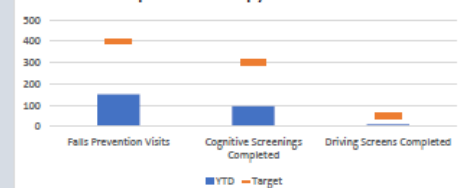
### Respiratory Therapy Reductions in Hospital Visits



### Medication Reviews Provided by Pharmacists



### Occupational Therapy Visits YTD



# Demonstrated Benefits of Shadow Code Data

- Better understanding of unique patient populations being served by region, can shift resources accordingly
- Simple and embedded directly within EMRs, significantly reduced administrative time, increased patient-facing time.
- Group programming = pillar of service delivery; group referrals were an organization-wide key performance indicator in 2022-2023,
  - Shadow code data demonstrated significant increase in referrals and group access, with notably more attendees compared to 2021-2022



# Demonstrated Benefits of Shadow Code Data

- Qualitative feedback from QI, leadership and clinical teams:
  - Provides more accurate picture of scope of work within primary care
  - Offers significant operational efficiencies for QI team





# Challenges

- Reiterate shadow coding is not workload measure
- Standardization requires consistent practice and discussion
- Adding new codes annually rather than ad hoc
- Creating meaningful codes
- Fostering positive relationships with clinic and physician partners



# Potential Future Use

- Vast code list offers endless potential for use of shadow code data:
  - Measurements around OHT priority population
  - Capturing social determinants of health
  - Looking at patient outcomes and not just presenting problems



# Questions?

- Kelly McConnell, Quality Coordinator,  
[kelly.mcconnell@thamesvalleyfht.ca](mailto:kelly.mcconnell@thamesvalleyfht.ca)
- Jillian Leslie, Data Analyst,  
[jillian.leslie@thamesvalleyfht.ca](mailto:jillian.leslie@thamesvalleyfht.ca)
- <https://thamesvalleyfht.ca/>

