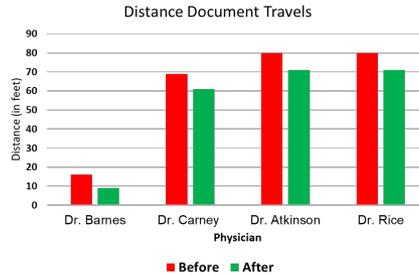# Decreasing Steps to Faxes from Triage Nurse

Aprel Barnes, MD
Cooperative Health
Columbia, South Carolina

JCG

Control: We held our gains by surveying MDs and triage nurses once per week to see if new process was still decreasing the distance documents travelled.

Distance Document Travels

Distance (in feet) — Physician: Dr. Barnes, Dr. Carney, Dr. Atkinson, Dr. Rice

■ Before ■ After

BEGIN

Define: Triage faxes cross several desks before being sent. This increases the possibility of paperwork being lost or misplaced. In addition, this increases motion waste of physicians and nurses that could use that travel distance for more important tasks. Process and CTQ discussed with MDs and triage nurses to obtain VOC.

CTQ: Decreased distance document travels from MD obtaining paperwork to it being faxed by triage nurse.
Process: Triage Faxes for MDs. **Goal:** Decrease distance from MD obtaining paperwork to triage nurse faxing it by 50% in 1 week. **SIPOC and spaghetti diagram used to visualize process. I walked the process measuring the distance of each step.**

Improve: Plastic letter wall file was placed above fax machine and labelled "triage". All MDs and triage nurses were updated on the new work flow of documents being placed in triage box after completion instead of returning to triage office. This change took 8ft off the total distance documents traveled before being faxed.


CONTROL — DEFINE — IMPROVE — **DMAIC** — MEASURE — ANALYZE
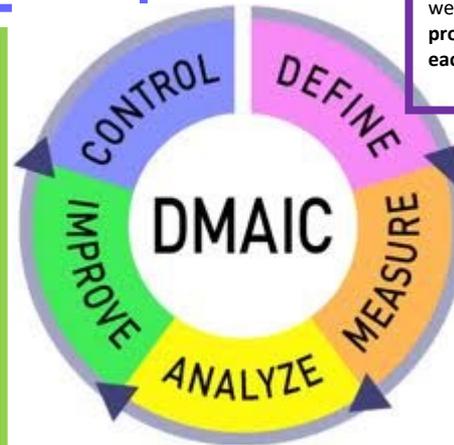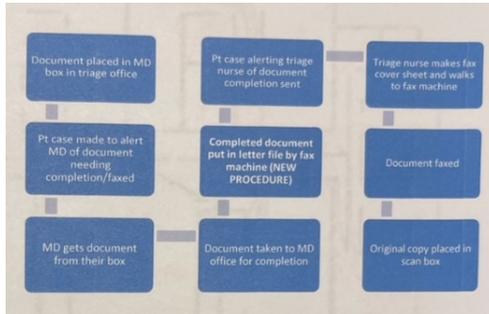
Measure:. Y= distance document travels from MD obtaining it to triage nurse faxing it

Baseline (Overall Practice):
Avg: 55ft
Range:16ft – 80ft

Team brainstormed ways to decrease distance document travelled to determine x variables. Distance document travels from triage office to fax machine for each MD measured 5 times and averaged to get baseline. Data collected for 1 week.

Summary: Physicians and triage nurses wanted to reduce the distance documents travelled prior to being faxed to reduce motion waste and opportunities for documents to be lost prior to being faxed. By taking away a step from the process and adding a wall file by the fax machine, document distance was reduced by 8ft. This was a 50% decrease for Dr. Barnes whose desk is closer to the fax machine, but is also a significant distance for the others as well.

Analyze: I studied the process of faxing documents and found that there was variation in where MDs took documents to be completed; however, the end location was always the fax machine. Causal tree was used to determine root Cause and elucidate what distances were redundant. I found that to reduce the total distance documents travelled before being faxed, taking the document straight to the fax machine would make the most difference.


Date: February 2022
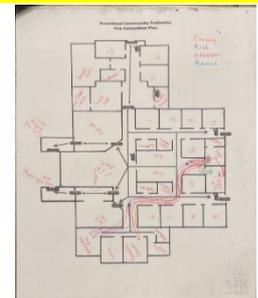
Decreasing Time Spent Obtaining Commonly Used Forms for Patient Care

Ranya Chakra, MD
Atrium Health Levine Children's Rock Hill Pediatrics
Rock Hill, SC

Atrium Health Levine Children's

JCG

Control:

In order to maximize efficiency in day to day patient care and minimize waste, 10 most commonly utilized forms were copied and organized in each of the three provider rooms.

The 5S system was implemented to provide for organizing of the office space and ensuring easy access to forms with a standard location in each exam room. Forms were placed in separately labeled manila folders organized in a metal file divider. This divider was then placed in a cabinet behind the provider chair. A Kanban system was implemented by adding a green sheet prompting the provider to restock the specific form/handout.

Form Retrieval Time

23.68

Goal: 12 seconds

Pre-intervention — Post-Intervention: 0

BEGIN
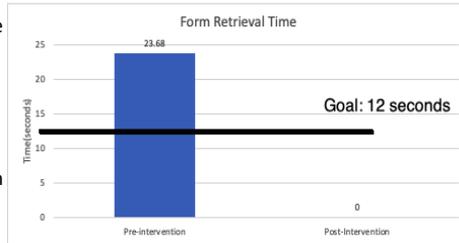
Define Step:
Patient encounters commonly require completion/distribution of forms for screening such as Vanderbilt, GAD-7 and informational handouts such as local dentists, counseling lists, acne, eczema etc to facilitate patient care. Forms located at provider work station outside of patient rooms. This has created a problem of too much time is being spent retrieving commonly utilized paperwork needed for patient visits thereby taking away from face to face patient care. A defect is anytime a provider has to leave the room during a visit to obtain a specific form and bring back to patient lasting over 12 seconds.

Process name/CTQ(Y): Time to retrieve form

**Goal Statement:** Reduce average forms retrieval time from 23 seconds to 12 seconds.

Spaghetti Map (After Intervention)

313 312 | 310 309 308
307 | Rock Hill Pediatric Associates | My Desk
306 305 304 | 303 302
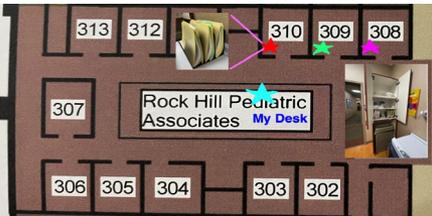
	Pre-intervention	Post-intervention
Time/week spent obtaining forms	19.7 minutes	10 minutes
Cost per year	$2850/year	$1446 per year

Improve:
Having forms outside of patient exam rooms led to significant transportation and motion waste. Therefore, 25 copies of the 10 most utilized forms were placed in a central location in each of the three exam room to minimize need for leaving the patient room during encounters.

The goal of this undertaking was to decrease average form retrieval from 23 seconds to 12 seconds or less, but having the forms in the room has essentially cut out retrieval time.

This intervention allowed for a more fluid/efficient patient encounter as well as savings of at least $1404 per year per provider. Completely eliminating need for provider to leave exam room translates to $2850 in savings per year per provider.

DMAIC

CONTROL — DEFINE — IMPROVE — ANALYZE — MEASURE
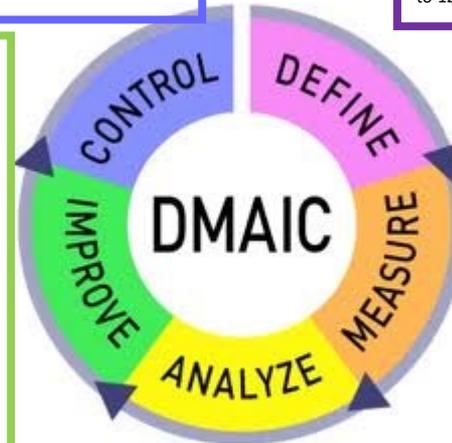
Measure:

Measure: Y= time to retrieve forms for patient care

Baseline:

Average: 23.68 seconds per encounter
Range: 18.3 Seconds – 28.2 Seconds per encounter
# of Trips/week: 50 times/week for various forms
19.7 minutes per week spent obtaining forms for patients

Summary:
Prior to undertaking this quality improvement initiative, numerous daily patient encounters required multiple trips from the patient room to provider desk to obtain forms for patient care, including mental health, general resources, and dermatology handouts. It was taking on average 24 seconds per encounter to obtain handouts for patient prior to intervention. In order to reduce transportation waste from constantly leaving room to obtain forms and bring back to room, forms were relocated to centralized, consistent location in each room and organized in separate folders.

This translates to at least $1404 in waste savings/money saved for one provider alone per year.

Analyze:
Undertaking this initiative sought to eliminate both transportation waste, over-processing waste, as well as motion waste.

A spaghetti diagram was created to analyze for areas of congestion and inefficient flow patterns. Form retrieval required physician to interrupt patient encounter to leave room, walk to desk and then return back to the room.

Spaghetti Map (Before Intervention)

313 312 311 | 310 309 308
307 | 28.2 sec 23.5 sec 18.3 sec | Rock Hill Pediatric Associates | My Desk | 301
306 305 304 | 303 302

MUSC Health — Medical University of South Carolina

JCG

Control: To hold the gains, updated instructions on how to access remote patient data were created and placed in a shared electronic folder with all physicians. In addition, signs were made with updated instructions and posted above each work station in the clinic precepting room.

Avg. Cycle Time
- BEFORE: 77
- AFTER: 26
- Target: 30 sec.
- Good

BEGIN

**Define:** Some diabetic patients in our clinic participate in a remote patient monitoring (RPM) program for their blood glucose levels. The data is not used as often as it could be during provider visits due to the amount of time it takes to access the remote data.

Process: Accessing Remote Patient Data
CTQ: Cycle time to access data from opening patient's chart to visualizing RPM data on external database.
Goal: Access time of 30s or less

Flow charts were used to visualize the process and identify areas of inefficiency. VOC efforts included interviews with physicians regarding barriers to accessing data.

.. **Improve:** To make it easier to find the patient ID number, I added it to a section of each patient's chart under the Care Coordination tab in the EMR. By doing this, it eliminated the need to go to the secure electronic file. I was able to reduce the amount of time needed to access remote patient data along with eliminating steps from the process flow chart.

Pilot Results:

 # Clicks Required: 7
 Fastest: 24 sec.
 Slowest: 31 sec.
 Average: 26 sec.

DMAIC — CONTROL, DEFINE, IMPROVE, MEASURE, ANALYZE

Measure:.   CTQ is cycle time to access data from opening chart to visualizing RPM data on external database.

BASELINE:

 # Clicks Required: 13
 Fastest: 67 sec.
 Slowest: 88 sec.
 Average: 77 sec.

Summary: Remote patient data is a very useful tool for physicians, but our process of accessing this data was very cumbersome thus dissuading some providers from using it during office visits.

By following the DMAIC method, we were able to decrease the time it takes to access this data as well as eliminate wasteful steps in this process. The average clinic appointment time is 30 minutes so being able to save any additional time will improve physician efficiency.

Analyze:

I utilized a fishbone diagram to brainstorm reasons why it takes so long to access remote data from the external database. The main reason identified was that the data is located on a site that is not linked to our EMR. Unfortunately I am unable to control this x factor so tried to focus on something that I could control.

In order to access the patient data, a patient ID number must be known. It is often difficult to find this ID number as it is located in a secured electronic file separate from the external database and the EMR. With this information and visualizing the steps within the flow chart, I was able to see that acquiring this ID number is what took a good portion of the time needed to access the data.

Correcting Scheduling Errors
Hannah Wakefield, MD, MPH
Health Care Partners of South Carolina

JCG

Control: Not correctly scheduling appointments was leading to loss-of-follow up and contributing to additional staff time to contact/reschedule patients.

Implementing check-out slips in the room helped ensure that providers checked if follow up (well visit) was needed. Patients were informed of needed follow up and had a physical reminder of this when they checked out with front desk. Front desk staff were able to correctly schedule patients with the correct provider, within the correct time frame, and for the correct reason.

% Correctly Scheduled

Before — 58%
After — 79%

BEGIN
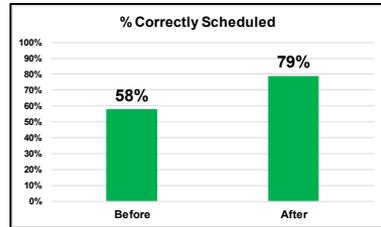
Define:
Concerns – patients not being scheduled with correct provider, within correct timeframe, or for the correct reason, thus contributing to loss-of-follow-up and additional staff time to track down / reschedule patients.

Goal – Increase the % proper scheduled patients

Methods – We used a SIPOC to help determine workflow from visit to checking out.

DMAIC
CONTROL · DEFINE · MEASURE · ANALYZE · IMPROVE
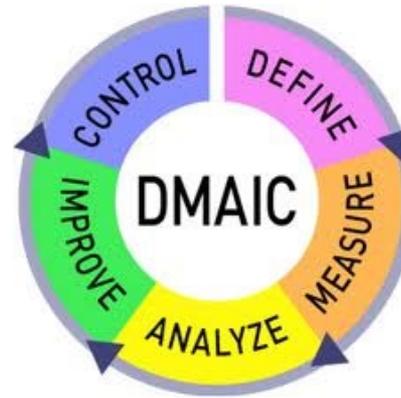
Measure: Y = % properly scheduled appointments

Records were reviewed for a week to check how many were properly scheduled and determine what scheduling errors were being made.

Baseline:
- **Correctly scheduled – 35 (58%)**
- Incorrectly scheduled – 25 (42%)
  - Wrong time – 2
  - Wrong reason - 5
  - Wrong provider - 1
  - F/U not scheduled - 12
  - F/U not given, but needed - 5

Improve: A new check-out slip was created to help keep providers on track, to help patients better understand why they need follow up, and to help front desk staff properly schedule follow up visits. Front desk staff were trained in how to read the check-out slips and these were provided in each patient room for providers to grab quickly and give to patients before leaving the room.

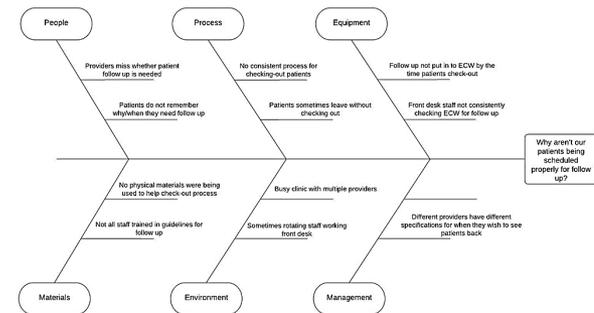Follow Up Appointment/Cita de Seguimiento

Summary: Implementing a check-out slip increased the percentage of correctly scheduled follow-ups from 58% to 79%.

This helps ensure better care for our patients, continued revenue to the clinic, and decreased stress on clinical and front-desk staff.

If this continues to be a success in pediatrics, there are tentative plans to implement among the other specialties (adult, OB/Gyn).

Analyze: In reviewing root causes, we determined there to be multiple factors leading to incorrectly scheduled follow up appointments.

The most common scheduling issues were follow-up not being entered in prior to patients checking out, follow up not being scheduled at all, and families not remembering why they need follow up.

Date: February 2022

Decreasing Pediatric Care Teams Intake/Triage Time

Ugochi Cantave, MD, MBA

Hopkins Family Practice

Hopkins, SC

Cooperative Health — Touching Lives. Changing Lives.

JCG — Lean Six Sigma

BEGIN

Define: Care Teams are essential to PCMH model. Nurses/MAs responsibilities are vital for the patients experience intake process during the medical visit. Proficiency and efficiency are key in the intake process. It is observed in the current process, at a particular clinic, the nurse intake is hand recorded. Then, transcribed into EMR.

CTQ (Y): Intake time for Nurse/MA intake for WI, Same Day, or Sick Visits appts. Current intake time averages 9.48 minutes per patient for Clinician ready.

Goal: Increase efficiency by reducing wasted time transcribing patient information from notepad to EMR by 2 mins.

Control: The findings were shared with the Care Teams. Each team had opportunities to share their experiences and what was learned. The new process will eliminate patient and provider wait time, motion, inventory and over-processing. It will also **save an estimated $3,777 a year** per Pediatric Care Team

Cycle Time (mins/pt)

GOAL	7m29s
AFTER	6m
BEFORE	9m29s

(axis: 0, 5, 10)

Measure: Y= Complete intake/triage time using laptop/tablet only.

Baseline: Average of 9 mins 29 sec/patient

Used a data collection over 10 days. First 5 days data collected with staff using paper (n=24). Last 5 days data collected with staff using laptop/tablet only (n=27).

Flowchart - Decrease Intake Time on Pediatric Care Teams (AFTER)

Wait

Average Cycle Time: 5.99 minutes N= 26

Average Cycle Time: 5.99 mins/pt

Improve: After analyzing, it was necessary to eliminate multiple redundant steps from the flowchart. Once the steps were eliminated, time/patient decreased.

	BEFORE	AFTER
Time/pt	9 mins 29 secs	6 mins
~5 pt per day	47 mins 24 secs	30 mins
per year	212hrs	134hrs

DMAIC — CONTROL, DEFINE, MEASURE, ANALYZE, IMPROVE

Flowchart - Decrease Intake Time on Pediatric Care Teams (BEFORE)

Wait

Average Cycle Time: 9.48 mins/pt N= 24

Average Cycle Time: 9m 29s /pt

Summary: Proficiency and efficiency are keys to intake process and overall PCMH model. By following the DMAIC method, our Care Teams were able to find the root cause in the current process. By eliminating redundant steps, intake time decreased from 9 mins 29 secs per patient to 6 mins per patient which is a 37% change, exceeding the goal by 11% and freeing up to 75 hours of time per year. This change will improve team and hopefully patient satisfaction.

Analyze: I used the 5 Whys analysis to find the root cause of why team members where handwriting information instead of using their laptop/tablet initially. I also performed a cycle time flowchart to assess flow and bottlenecks in the process. The process of 5 Whys showed team members perceived the intake process would be faster if using paper because the laptop is heavier, smaller screens, etc. The Flowchart did depict wasted motion, inventory (paper, sticky notes, etc), patient/provider waiting, over-processing (too-many steps, redundant work)

5 Whys:

MA/Nurse uses paper instead of laptop to enter intake information — Therefore — Why — Preceives process is faster — Therefore — Why — Paper is lighter, easier to read and easier than laptop — Therefore — Why — Laptops are heavier, screens are smaller and harder to read — Therefore — Why — Refuse to carry laptops and utilize

Date: 12/22/2020

Decreasing Time Spent Obtaining Vitamin D Samples for Newborns

Sara Ritchie, MD
MUSC Children's Care Northwoods
Charleston, SC

musc Children's Health
Medical University of South Carolina

JCG

Control: Samples were relocated to a more central sample closet that does not require a key for entry. The new system eliminates wasted time retrieving a key to the sample closet. This is estimated to save ~$320 per year for the practice and will also decrease time that patients are waiting. Additionally, we were able to decrease the time to obtain samples by >50% which is better than our original goal.

Overall Practice Results

BEFORE 9
Goal: 4.5
AFTER 3.75

Cycle Time (Hrs)

BEGIN
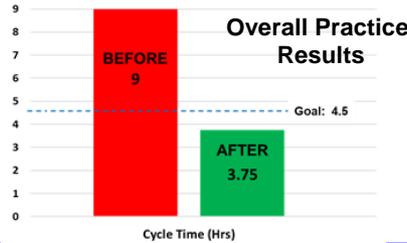
Define: Moving from exam rooms to obtain and return the key to the drug sample closet causes delays in wrapping up the patient encounter.

Process: obtaining samples for patients
CTQ: time to obtain the drug samples
Goal: decrease time to obtain samples by 50%

I created a spaghetti diagram to document the current process. VOC efforts included interviews with the other providers.

Improve: The conclusion was to move the sample closet to the medication room which is operated by a digital door lock and centrally located. The average time to obtain samples from the new sample closet was 30 seconds versus 71 seconds previously.
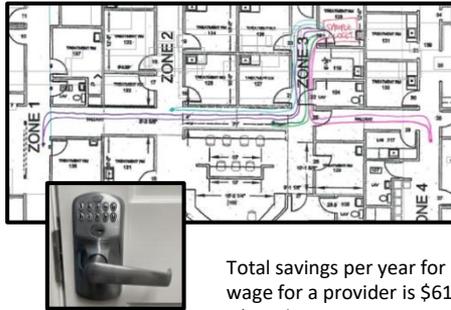
Pilot Results

	Before	After
Time/trip:	71 seconds	30 seconds
Trips/wk:	8.75	8.75
Time/year:	9 hrs	3 hrs 45min

Total savings per year for our clinic is 5.25 hours per year. Estimated hourly wage for a provider is $61/hour which would result in a savings of ~$320/year.

DMAIC — CONTROL, DEFINE, MEASURE, ANALYZE, IMPROVE
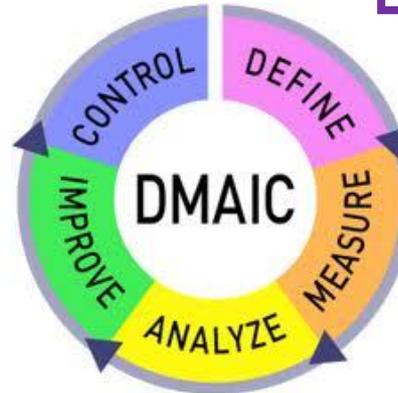
Measure:. Y = Time to walk to obtain drug samples

Baseline: 71 seconds round trip

Using a Data Collection plan, the number of trips to the drug closet were observed over 4 weeks to determine the full range of operating conditions.

The average weekly number of trips was 8.75. Therefore, the average time spent monthly on obtaining drug samples is 41.5 minutes and annually 9 hours.

Summary: Providers were spending unnecessary time walking to obtain and return a key to the sample closet to obtain samples for patients.

By following the DMAIC method, we discovered the root cause which was a no-cost solution. Benefits include a savings of 5.25 hours per year for the practice and a savings of ~$320 in addition to improved provider and patient satisfaction.

Analyze: I used a spaghetti diagram to highlight the wasted movement of the provider leaving the patient room area to obtain a sample closet key, obtain sample, return key, and return to patient room area. The waste of excess motion and transportation was obviously the source of our issue.

Date: 1.21.2021
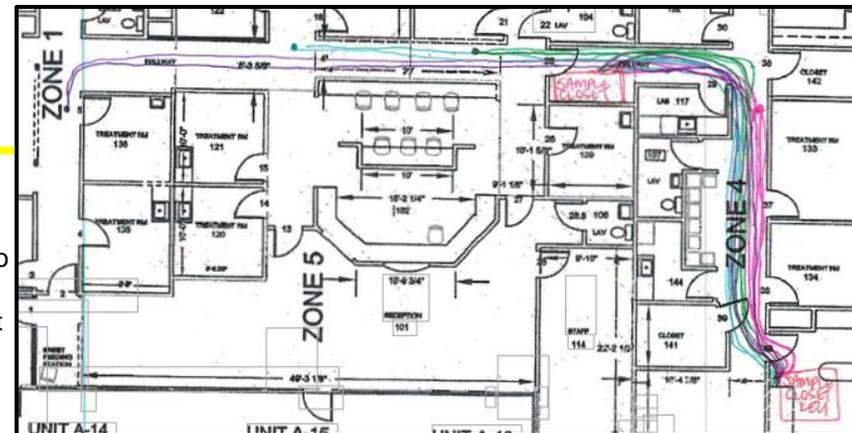
Reducing Patient Rooming Time

Blakely Amati, MD
Center for Pediatric Medicine
Greenville, South Carolina

PRISMA HEALTH Children's Hospital

JCG
Lean Six Sigma

Control: The addition of the new freezer on Side B eliminates the wasted time needed to walk multiple times to the other side of clinic to obtain live virus vaccines. **Average savings of 104 nursing hours, or $2392 annually.** By decreasing time to obtain vaccines, we were able to **decrease room turnover by 37%** and **decrease rooming time by 6 minutes**.

	Before	After
Avg:	28.8 min	22.8 min
Range:	16-63 min	10-38 min
Sigma Level:	0.65	1.25
Yield:	19%	41%

Figure 4

BEGIN
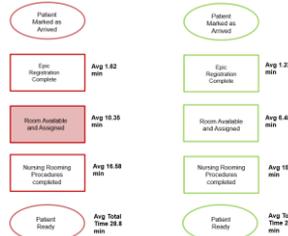
Define: Providers noted that it was taking too long to room patients. We have a clinic expectation that patients will be ready for the physician to see within 20 minutes of arrival to clinic. Not meeting this has led to patient flow issues which are bound to only worsen during sick season and well as decreased patient and provider satisfaction. Our CTQ was rooming completion time (time to physician walking in to see patient with vitals in the computer) and the process was the Rooming Process. **Goal: Reduce % rooming times taking over 20 minutes from 80% to 40% by January 20, 2021**.

We made a SIPOC, top down chart and spaghetti diagram of the as-is process by walking the process, documenting it and timing each step. VOC efforts included nurse and provider interviews and focus groups.

·**Improve:** Our practice was able order an additional vaccine freezer for Side B at our clinic. This has **decreased nursing time spent on this step by 75%.**

Before: **After:**
90 sec **20 sec**

Figure 3

DMAIC
CONTROL — DEFINE — MEASURE — ANALYZE — IMPROVE
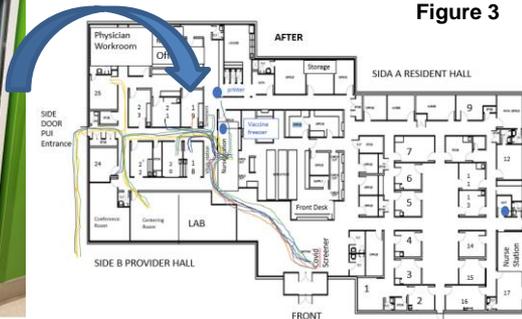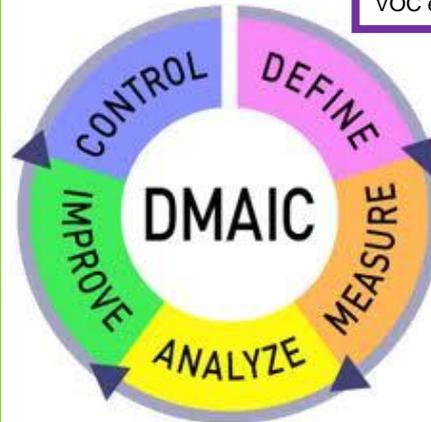
Measure:. Y= Rooming time (clinic arrival to patient being ready for physician)

Baseline:
 Avg: 28.8 min
 Range: 16-63 min
 Yield: 19%
 Sigma Level: 0.65

We used a C/E diagram and matrix to define X variables. We collected Epic Event Tracking log times on different days and times over a 2 week period to ensure data reliability. We also observed flow at random times.

Summary: Providers expect rooming time to take 20 minutes or less. We were averaging 28.8 minutes and only meeting expectations 19% of the time, leading to provider and patient dissatisfaction.
*By following the DMAIC method, we uncovered multiple issues, and chose to focus initially on decreasing excess motion for nursing, reducing our overall average rooming time to **by 6 minutes.** We have not yet met our goal of 20 minutes consistently, but have **increased our yield to 41%.***

Date: January 21, 2021

··**Analyze:** Through process study we found that room turnover was causing unnecessary delays in rooming subsequent patients. BOBs and WOWs showed best practices and anomalies. It seemed that there was excess motion occurring due to nurses having to walk to vaccine freezer on other side of the clinic multiple times per shift to obtain live virus vaccines.
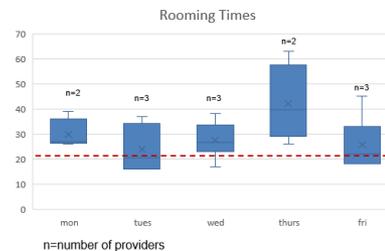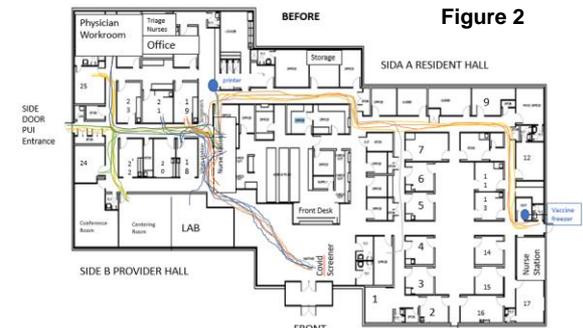
Rooming Times

n=number of providers

Figure 1

BEFORE **Figure 2**

Faster Vaccinations

Ezra M. Ash-Malachi, MD

Hopkins Family Practice

Hopkins, SC

Cooperative Health

JCG

BEGIN

Control: The commonly used were placed in the rooms in an easily accessible area. The nurses were more than amenable to using the conveniently placed forms.

Non-Financial Benefit: Decreased time in patient room turnover/rooming patients.

Financial Benefit: Savings of $677 per year. By decreasing the average vaccination time by 39 seconds, this will decrease time used by nursing staff by 390 seconds (6.5 minutes) per day. This will translate into 26 hours per year at $26.05 per hour will result in $677.30 more per year.

Define: In our office, Adult providers are frustrated in the turnover time of their exam rooms. The process from intake to patient receiving vaccination takes longer than expected. During the vaccinations process , it was observed that there are multiple unnecessary steps which may be contributing to increased turnover time.

CTQ: Time is takes to give vaccinations. Average time currently is 328 seconds.

GOAL Statement: Decrease turnover time from 328 seconds by 10%, ~30 secs .

I used a SIPOC and a spaghetti map. I interviewed nursing staff to find out the problems with the process in an effort to get VOC.
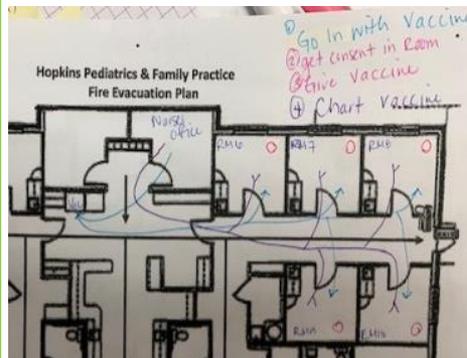
Improve: I placed the VIS and consent forms for the 4 vaccinations I routinely give in exam rooms 6-10. I placed them in file folders in the drawer in the rooms. The nurses then used the forms in the rooms and cut their walk time.

Pre-Intervention Avg Time	Post-Intervention Avg Time
328 seconds	289 seconds

Estimated savings per year $677 in nurse's salary by decreasing walk time 26 hours in a year.

CONTROL — DEFINE — IMPROVE — DMAIC — MEASURE — ANALYZE

Measure: Y **=** Time it takes to give vaccination

Baseline: Average Vaccination Time: 328 seconds. Range 226-376 seconds

Data collection: direct timing by nurse using stop watch. To decrease variability, I only used one nurse.

Summary: Adult providers are frustrated in the turnover time of their exam rooms. During the vaccinations process , it was observed there are multiple unnecessary steps which may be contributing to increased turnover time.

Using DMAIC, we were able to eliminate waste and decrease patient room turnover time. Which will result in a savings of $677 per year of nursing time.

Analyze: I used a spaghetti map and found transportation and excess motion waste. I saw that there was transportation waste by the necessary forms not being where they were used but in a centralized location which required the nurses to walk twice and get them. Once this was found, I was able to find the cause for this waste with forms that were not easily accessible.

Date: 1/18/2021

CARE COORDINATION INSTITUTE

Healthcare Lean Six Sigma
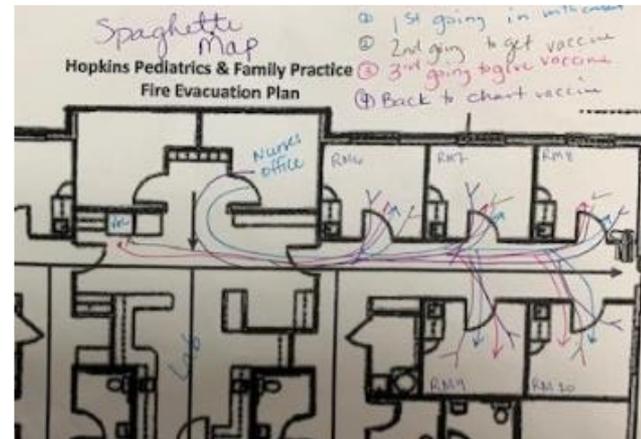
Decreasing Time Spent on NP Chart Audits
Jeniqua Duncan, DO, MBA
CareSouth Carolina, Inc.
Hartsville, SC

careSOUTH carolina

..

Control: The custom report was saved and named for easy access. The selected report continues to run in the background while charts are being reviewed which cuts out the time it takes to re-select the report. Additionally, the last variables are also saved so less time is spent changing NP name and date. The changes will save the reviewer over 12 hours annually and the corporation $1,536.42 annually.
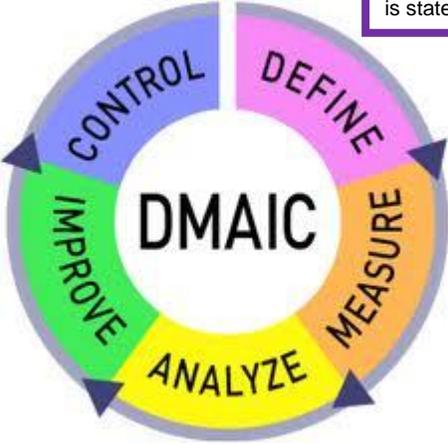
BEGIN

Define: To comply with the South Carolina Nurse Practice Act quarterly chart audits are performed on all nurse practitioners to evaluate safety and quality. Although improvements had already been made the process of reviewing 4 charts per 32 NPs seemed to take a long time. Our CTQ was Time from chart selection to completion of audit forms

Goal: Decrease time it takes to complete NPs audits from chart selection to form completion by 10% from the baseline 7.86 hours.

A SIPOC and process map were used to document the as is state.

Improve: The solution was to create a custom report in the EMR which could be run for each NP at time of chart audit. The report search produced office visits by a certain NP which occurred after a date. The output displays patient name, date of visit, and reason for visit. The chart can be entered by double clicking on the patient line. Four different NPs were reviewed using the newly created report. Again, care was taken to include NPs "similar" to the baseline NPs reviewed. Significant improvements were made. A 38% reduction in time exceeded our goal of 10%.

Time to Complete NP Chart Audits (Hours)

- Goal (10% Reduction)
- Actual (38% Reduction)
- Before: 7.86
- After: 4.84

DMAIC — CONTROL / DEFINE / MEASURE / ANALYZE / IMPROVE

Measure:. Y = Time from chart selection to audit form completion

Baseline: 7.86 hours

A Cause and Effect Diagram was used to determine X factors. Four NPs were reviewed and time data collected to extrapolate a total time for 32 NP reviews. The 4 baseline NPs varied in practice length and patient populations to get a full spectrum of all practicing NPs.

Summary: Physicians expressed frustration about the time needed to complete NP reviews. By following the DMAIC method we determined causes for the extended time. Two process steps had root causes in the view being used in the EMR. By changing how the EMR was used time spent was decreased from 7.86 hrs to 4.84 hrs which is a 38% change, exceeding our goal of 10% reduction. This change will improve job satisfaction for reviewers and additionally help ensure that we remain compliant with the law.

Analyze: 5 Whys and FMEA were utilized to analyze and determine root cause. This work showed that the view used in the electronic medical record (EMR) did not provide prevention controls. The process step with the highest RPN on the FMEA did not have actions within the scope of this improvement project. The process steps with the second and third highest RPN were both related to accessing the EMR. The conclusion was to address process steps related to the EMR.

Process Step	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s)/Mechanisms of Failure	Occurrence	Current Prevention Controls	Current Detection Controls	Detection	RPN
Open schedule and pick random date on schedule	Clinician did not see patients that day	Must select another date		schedules are variable & I don't have the schedule readily available		nothing		10	420
Select patient	Inappropriate visit to review (well visits, MAT, physicals)	must select another patient		visit types are not shown in the schedule view on GE	7	nothing		5	378
Review Chart	Poor documentation or management requiring further investigation in the chart	extra time spent looking through the chart		individual clinician practice	7	nothing		10	420
	I am uncertain of appropriate management	extra time spent researching condition/treatment	7	depends on my training and memory		nothing			310
Complete form	Complete form incorrectly	must report form		mixed up information or forgot component		double check information before filling out form		4	96
		must redo form							

Decreasing time spent obtaining paperwork for patients

Kate Herwig, MD
Sweetgrass Pediatrics
Charleston, SC

Control New desk top filing boxes were placed in each patient room and the top 10 most utilized documents needed for patient assessment or documentation were placed in alphabetical order with **Kanban slips** inserted to know when to refill. The new system eliminates the wasted time needed to walk to the single central filing cabinet. This is estimated to **save $1854 a year** per provider and will also decrease time that patients are waiting**.**

Cycle Time (min.)

4.28

- - - - - - **Goal (2.5)**

0

Before   After

BEGIN
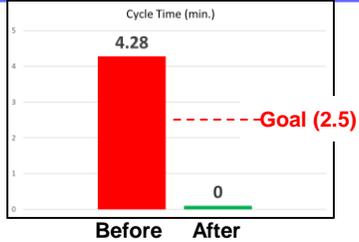
Define: There are various forms utilized to screen patients (PHQ 19, Vanderbilts, etc.) and other forms frequently requested by patients to be filled out by providers (School med, physicals, etc.). They are currently located in a filing cabinet that is outside of the patient rooms.

Goal: Our CTQ (Y) is paperwork retrieval time. The objective is to decrease the amount of time spent obtaining paperwork from an average of 4.28 min to less than 2.5 min daily.

Improve: I obtained desktop filing boxes to be placed in each patient room and have each of the top 10 most utilized documents in each one. This also **reduced cycle time to 0** as I was able to utilize **parallel processing** and continue discussions and initiate filling out forms while never leaving my work station..
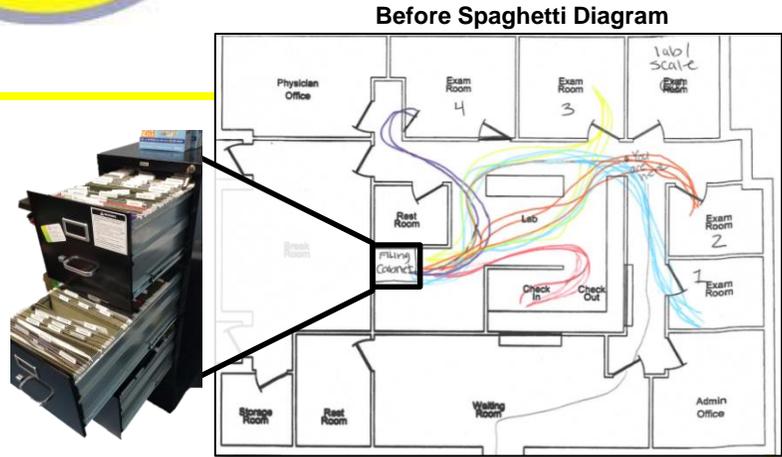
After Spaghetti Diagram

CONTROL   DEFINE
IMPROVE   DMAIC   MEASURE
ANALYZE
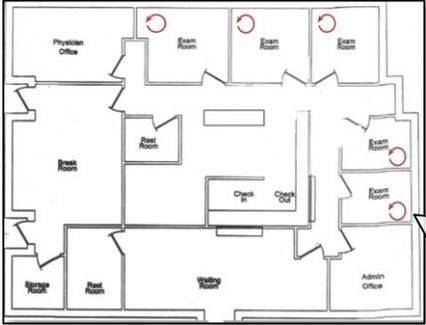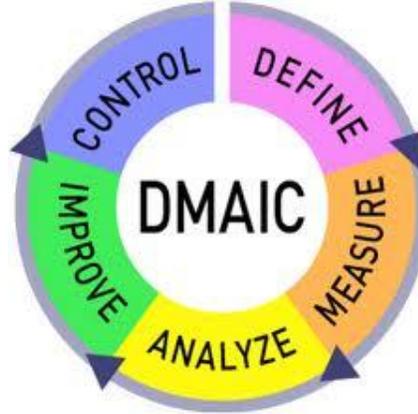
Measure:. Time spent daily retrieving documents required for patient care, based on an average time of **32.8 sec per trip and an average of 7.8 trips daily**

Baseline – Based on 6 days of documenting the number of times I leave the patient room, I average 4.28 min daily obtaining paperwork. Financial impact was calculated using a waste calculator. 4.28 min wasted per day X 5 days a week X 52 weeks a year/60 sec – **18.54 hours a year which would be a savings of $1854 per year.**

Before Spaghetti Diagram

Summary: By following DMAIC and utilizing spaghetti diagrams, Kanban, and parallel processing, I was able to reduce non-value added time spent retrieving paperwork by over 18 hours a year at a savings of over$1800/yr per provider.

Analyze: I analyzed which forms where most utilized and used Spaghetti diagrams to highlight the wasted movement of the provider leaving the patient rooms multiple times daily to obtain paperwork The waste of excess motion and transportation was obviously the source of our issues.
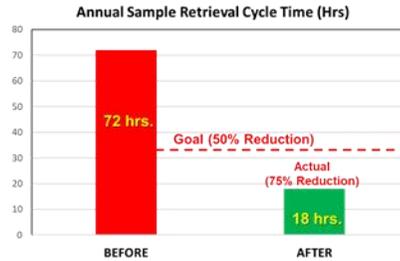
Date: 1/21/2020

Decreasing Time Spent Obtaining Drug Samples for Patients
Christine McGinley, D.O.
Little River Medical Center
Little River, SC

Little River HEALTHCARE

JCG

Control: A new policy was created and implemented for a total of three Physicians at Little River Medical Center. Staff received training on the new process including keeping the closet properly stocked to avoid any unnecessary trips to the further closet.

Overall Practice Results

	Before	After
Time/year	72 hour	18 hours
Cost per year	$7,200	$1,800

Annual Sample Retrieval Cycle Time (Hrs)

72 hrs. — Goal (50% Reduction) — Actual (75% Reduction) — 18 hrs.
BEFORE — AFTER

BEGIN

Define: Moving between my exam rooms and the drug sample closet causes delays in the schedule/ wasted time that could be utilized for other tasks.

Process: obtaining samples for patients

CTQ: time it takes to obtain the drug samples

Goal: decrease time to obtain samples by 50% and decrease delays in the schedule.
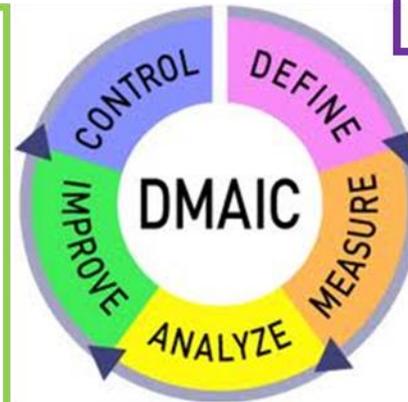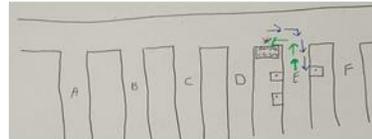
I created a SIPOC and a spaghetti diagram to document the current process. VOC efforts included interviews with the patients and nursing staff.

Improve: The conclusion was to move the sample closet closer to the exam rooms and therefore save time in transportation. A study was piloted in my hallway and the time to walk to the new sample closet was 15 seconds vs 60 seconds with the previous closet location.

Pilot Results

	Before	After
Time/trip:	60 seconds	15 seconds
Trips/month:	120	120
Time/year:	24 hours	6 hours

Spaghetti Map (After)

Total savings per year for 1 Physician is 18 hours per year. Estimated hourly wage for a Physician is $100/hour which would result in a savings of $1800/year.

DMAIC — CONTROL, DEFINE, MEASURE, ANALYZE, IMPROVE

Measure:. Y= Time it takes to walk to the pharmaceutical closet to obtain samples.

Baseline: 60 seconds round trip

Using a Data Collection plan, the number of trips to the drug closet were observed over 4 weeks to determine the full range of operating conditions,.

The average weekly number of trips was 30 and the number of monthly trips was 120. Therefore, the average time spent monthly on obtaining drug samples is 2 hours and annually 24 hours.

Spaghetti Map (Before)
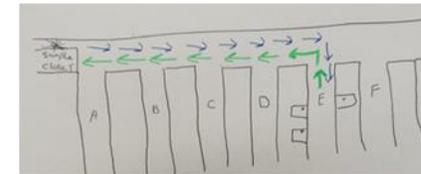
Summary: Physicians were spending unnecessary time walking to the sample closet to obtain samples which was causing delays in the schedule. This resulted in dissatisfaction for both Physicians and patients.
By following the DMAIC method, we discovered the root cause which was a no-cost solution. Benefits include a savings of 54 hours per year for the practice and a savings of $5,400 in addition to Physician and patient satisfaction.
Date: 1.22.2020

Analyze: Root cause analysis was performed using 5 Whys and a spaghetti diagram. The root cause was determined to be excess distance between the drug closet and the exam rooms which caused increased time in obtaining samples.

5 Whys
Too Much Time to Obtain Samples
Sample Closet is too far
There is only one sample closet for the entire medical center
Need permission/ Policy to obtain a second sample closet

Reducing Charting Time for Viral URI Diagnosis

Dr. Kelli E. Johnston, DO
Coastal Pediatric Associates
Charleston, SC

COASTAL PEDIATRIC ASSOCIATES

JCG
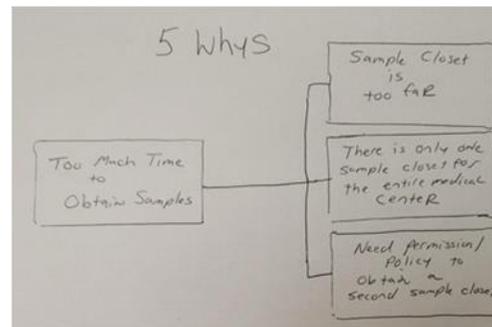
Control: Charting time was reduced from an average of 20.1 seconds/chart to 2.5 seconds/chart. Charting the assessment for viral URI diagnosis was costing $130/month prior to the institution of text macros and was reduced down to $12.45/month which represents a cost savings of $117.55/month and $1410/year.

BEGIN

Define: Charting takes up a large amount of time throughout the day and reduces workflow and productivity and therefore revenue. Viral upper respiratory infection is a very common pediatric diagnosis for which docu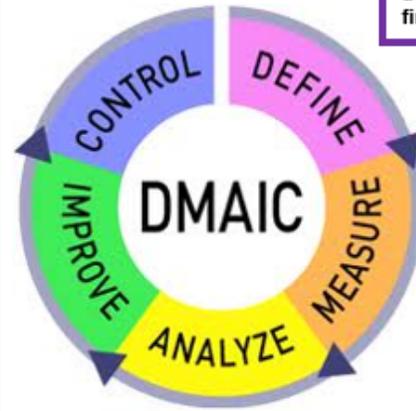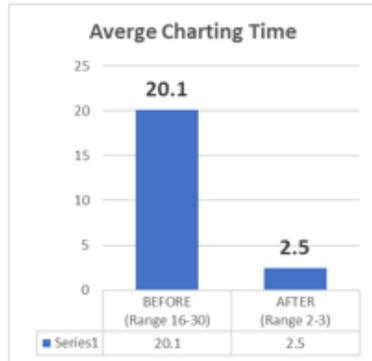menting the plan is repetitive and time consuming. The goal of my project is to reduce charting time for viral URI diagnosis by 10% in one week. A SIPOC and Top Down chart was used to help define the problem. The CEO and CFO were queried about keystrokes used/chart, percent chart closure/day and the financial value of time spent charting.

Improve: The use of text macros was instituted as a short cut to reduce charting time. This solution was arrived upon via brainstorming and chosen for it's relative ease and speed on implementation.

BEFORE	AFTER
Average 20.1 sec	Average 2.5 seconds
Range 16-30 sec	Range 2-3 seconds

Averge Charting Time

	BEFORE (Range 16-30)	AFTER (Range 2-3)
Series1	20.1	2.5

DMAIC — CONTROL · DEFINE · MEASURE · ANALYZE · IMPROVE

Measure: Baseline charting time for viral URI assessment and plan was 22 seconds/chart Data was collected by timing the length of charting for 14 different charts over the span of 2 days and then averaged. The financial impact was calculated by adding up the amount of time spent charting and using a fully burdened cost rate estimate of $160/hour. An average of 49 minutes/month was used charting for viral URI assessment and plan at a total cost of $130/month or $1568/year.

Summary: By instituting the use of text macros for the assessment and plan portion of documentation for the diagnosis of Viral URI, I was able to quickly reduce charting time from an average of 20.1 seconds to 2.5 seconds/chart resulting in a net estimated cash savings of $1410/year.

Analyze: The 5 Whys were used in efforts to determine the root cause of charting time taking too long. Charting takes too long because of typing speed and errors which are related to use skill and training.

Charting takes too long → Therefore → Typing is time consuming → Therefore → Slow keystroke speed and inaccuracies → Therefore → User lacks capability → Therefore → Lack of training

Date: 02/10/2020
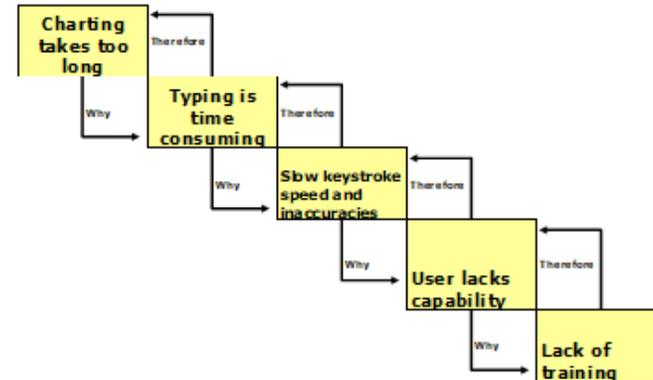
Increasing Depression Screenings for Primary Care Patients
Lisa Lanning Lowther, D.O., M.S.
Hope Health

Control: Nursing Staff **posted reminders** on white board "Do Depression Screening on Every Patient" and committed to do this for a month. At the end of one month intervention, significant improvement was noted, encouraging nursing staff to continue screening efforts to bring screening back to threshold and above target as we had previously exceeded depression screening for our patients until reporting was stopped in mid-2018.

% Patients Screened for Depression

Goal (75% Screening)

52% 67%

BEFORE AFTER

BEGIN

Define: A significant drop-off in depression screening occurred from 4Q18 into most of 2019.

Process: Screening patients for depression

CTQ: % Patients screened for depression

Goal: Increase screening % from Nov 2019 baseline of 52% to target of ≥ 75%
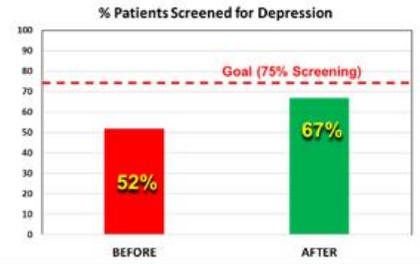
Improve: When we realized screenings had fallen precipitously, we used the Lean technique of **brainstorming** to develop simple **quick win solutions** that we **fast and inexpensive**. We made an effort to screen ALL patients with PHQ-2 (followed by PHQ-9 if positive). Within two months we demonstrated a 15-point improvement in patients screened for depression, increasing to 67% screened. With continued application, we anticipate meeting and exceeding the 75% benchmark for mandatory Depression Screening within the first quarter of 2020.

Pilot Results

	Nov 2019	Jan 2020
	Before	**After**
% Screened	52%	67%

DMAIC — CONTROL, DEFINE, MEASURE, ANALYZE, IMPROVE

Measure:. Y= % patients screened for depression per month. (Target: ≥ 75%)

Baseline: Although we were above target in prior years, a decline began at the end of 2018, ultimately hitting our lowest level of 37% in June of 2019. (Data was not collected for half of 2018.) Nov. 2019 baseline = 52%
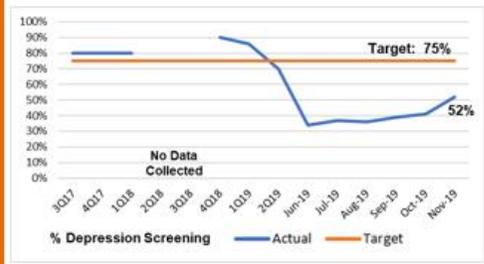
Summary: UDS requires annual Depression Screening using validated instrument for all patients ages 12 and older served by FQHCs, and follow-up plan documented if screening is positive.

We noticed Depression Screening scores fell dramatically between 2018-2019 and via a quick-win DMAIC project reversed the trend from a baseline of 52% to 67% and continue toward the goal of 75%

Analyze: Root cause analysis was performed using a **fishbone diagram.**

Several leading causes for the decline were uncovered.

Target: 75%

52%

No Data Collected

% Depression Screening — Actual — Target

BEAUFORT PEDIATRICS

Improving Work Flow for Providers
Jill Aiken, MD
Beaufort Pediatrics, P.A.
Beaufort, SC

CARE COORDINATION INSTITUTE
Healthcare Lean Six Sigma

Control: We held our gains by interviewing providers asking them what was improving work flow and what was not. Some providers chose not to participate choosing work flow that suited them better. Folders were restocked as providers used forms monthly.

New Process

BEGIN

Define: Providers were having to leave their rooms to fetch lab orders, supplies, forms and screens. There were issues with communication with nurses when needing tests run or treatments. CTQ was being able to finish encounter without leaving room. Goal: Decrease # of times leaving room from average of 2.7 to 1 per day by 6/14/19
I made SIPOC and spaghetti diagrams of the as-is process. VOC was documented by doing surveys for factors for "Y". Breakout sessions and interviews were also employed. Process map was drawn.

Improve: Using focus groups and best practices of BOBs, I created 3 folders with desired handouts, forms and screens that providers needed at fingertips. Each folder was labeled with the contents. A new process map was created to help work flow. Pilot ran for 2 weeks.

	Before	After
Avg	2.7	0.7
Range	0-4	0-1

DMAIC — CONTROL · DEFINE · MEASURE · ANALYZE · IMPROVE

Measure:. Y = # of times leaving room for forms, Baseline: Average 2.7 Range; 0-4
I used C/E diagram to identify potential causes for leaving rooms. Brainstorming techniques used. Data was collected from providers for 2 weeks. Financial impact was calculated using a waste calculator. If estimating average of 3 .5 minutes wasted per day X 228/60= 13.3 hours saved X$90/hours = $1197 X 6 FTE= $7192 saved

Summary: Providers were frustrated when they were having to leave the rooms to fetch forms and averaging 3 times a day to get needed supplies or communicate with a nurse. By following the DMAIC method, we identified forms that were needed, and put them in folders in each room. We developed a process map to improve work flow to eliminate excess movement from rooms, reducing provider leaving room to less than once a day.

Analyze: I studied which forms were commonly needed in the rooms, causing providers to leave and search for them. I found variation in the work flow patterns between different providers, BOBs and WOWs were identified. Spaghetti diagrams highlighted the wasted movement of some providers going to different copiers that were inconveniently located in relation to their rooms. Data showed that 3 of the 7 providers were leaving rooms 4 times more often, primarily to fetch forms they needed and to print to printer. I concluded we could save time and movement by printing to front office and task patients with collecting their forms and printouts.

Reducing Approval Cycle Time on Special Funding Process
Temisha Budden, PA-C
Sandhills Medical Foundation, Inc.
Sumter, SC

CARE COORDINATION INSTITUTE

Healthcare Lean Six Sigma

Control: Prior to roll out of the final process, updated fillable pdf request forms were sent to all clinicians with instructions on how to complete the form and how to submit requests. Dummy "testing' emails were sent to the committee members with instructions on how to open the email and click the "voting" option. Screen shots of each step were included in the email for visuals.

Before it was taking anywhere from same day response to **up to 7 days** to respond. **After**, responses were received immediately upon opening email which have been **no longer than 24 hours**. **Before** a minimum of **10 sheets** of paper per requests were being printed. **After** a minimum of **1 sheet** is being printed
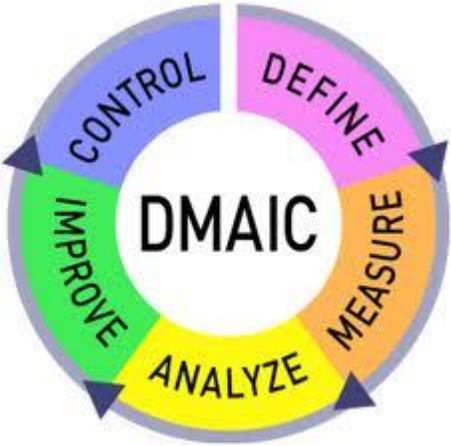
BEGIN

Define: Committee members where complaining too many requests were being sent and too much paper being wasted printing out requests for review. It was taking up to a week to receive responses from committee members. The expectation was a response w/in 72 hours for standard requests and w/in 24 hours for urgent requests. We failed to meet the expectation. **Goal was to reduce amount of paper being printed and respond to request within 72 hours of receipt.**

Improve: Using brainstorming, we created several solutions and discussed with the IT department to see which would be the best option for a "quick win". The solution was to convert the document in to a "fillable" pdf file for those making the request, then utilize the Outlook software to create emails using voting buttons for responses. Each committee member would be able to review the request submitted via email and respond immediately using the voting options: 1. Approve 2. Disapprove or 3. Need More Information. The responses would be automatically directed to the sponsor of the email. Once all responses received by sponsor, an email would be forwarded to the CMO for final approval from the CEO

Automated Voting

Vote Reply Reply Forward
All

Approve
Reject
Need More Information

Fillable PDF

PDF

CONTROL DEFINE
IMPROVE MEASURE
DMAIC
ANALYZE

Measure: Y= Approval cycle time.

Baseline: (Committee Response to Requests)
Range: .25-7 days

Target: $\leq$ 3 days

Multiple past requests were reviewed to determine the range of approval times.

Summary: Committee members were feeling overwhelmed and frustrated with the amount of requests and papers to print

By following the DMAIC method, we were able reduce approval cycle time to less than 24 hours with a no-cost solution, reducing wasted paper and obtaining immediate responses to requests. This should lead to improvements in both clinician and patient satisfaction

	BEFORE:	AFTER:
Time:	.25-7 days	0 – 1 days
Paper:	10 sheets	1 sheet

Analyze: We found it was taking longer for some to review requests due to:
- overabundance of emails and requests getting "lost" in the shuffle
- committee members being out of the office with limited access to emails and work day schedules
- the amount of requests received varied from week to week

Date: 5/18/2019

Improving Pediatric Universal Cholesterol Screening Rates

Erin K. Balog, MD
Sweetgrass Pediatrics

Sweetgrass Pediatrics

CARE COORDINATION INSTITUTE

Healthcare Lean Six Sigma

..
Control: In order to ensure we held the gains on these results going forward we will:

- Announce cholesterol screening rates monthly to practice providers
- Query providers for feedback on process monthly for 6 months
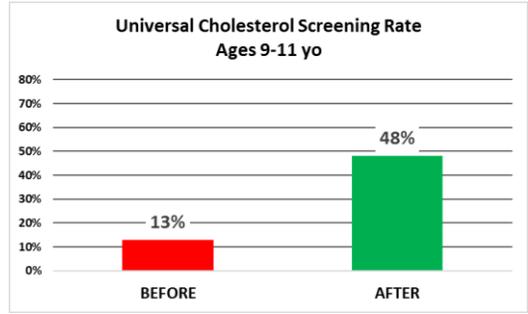- Implement recommended updates/changes from providers

BEGIN

Define: Elevated cholesterol in pediatric patients can impact their future health and is often hard to detect. Our practice implemented a screening protocol aligned with AAP guidelines. **Goal: To increase the % of eligible patients screened.** We created a *SIPOC* and a detailed *process map*. Additionally, we looked at the *Voice of the Business* to improve the process.
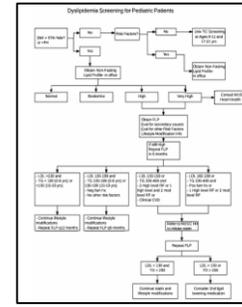
Improve: To improve the follow-up rates we implemented the following changes and realized an improvement from 13% to 48%:

- Created/delivered educational update for Providers and MAs
- Simplified clinical decision-making flowchart with MUSC HH Program
- Created new reminder flag in EMR

Universal Cholesterol Screening Rate Ages 9-11 yo

	BEFORE	AFTER
	13%	48%

DMAIC
CONTROL — DEFINE — MEASURE — ANALYZE — IMPROVE

Measure: Y = % eligible patients screened

Baseline: 13%

Target: 35%

We completed a Cause & Effect (Fishbone) Diagram to determine which factors (X) may be impacting the problem.

Summary: By following the DMAIC method, we improved the pediatric cholesterol screening rates from 13% to 48%, exceeding our goal of 35%.

This can help lead to better future health for our patients

Analyze: In studying the potential X-Factors that caused the screening levels to be less than desired, we determined the most likely *root causes* to be:

- Providers: Current guidelines confusing and controversial
- Medical Assistants: Focus on vaccines, not screening prior to provider evaluation

Machines
Machine is hard to use?
Hard to get blood for FS

Materials
Lancets not in stock
Slides for macine not in stock

Methods
MA already having to plan for vaccines needed, not checking Chol status

Patient/family not aware of screening rec- hesitant

MA not sure how to use machine

Providers not asking for testing

Patients don't want the test

Patient already getting vaccines, too much

Providers not sure what to do with abnormal result

Providers not in agreement with current AAP practice guideline

Why aren't we obtaining Universal Cholesterol screens on every 9-11 yo patient at their well-child visit?

Environment   **People**   **Measurement Systems**

Date: 17 September 2019