

Your Quality of Life is Our First Priority

Measurement and Analysis
Presented by: Jennifer Bean



Purpose and Learning Objectives

- Describe the difference between outcome, process and balancing measures
- Outline the importance of data to tell the story of your improvement projects
- Demonstrate the ability to analyze and recognize improvement in a run chart



Why this session?

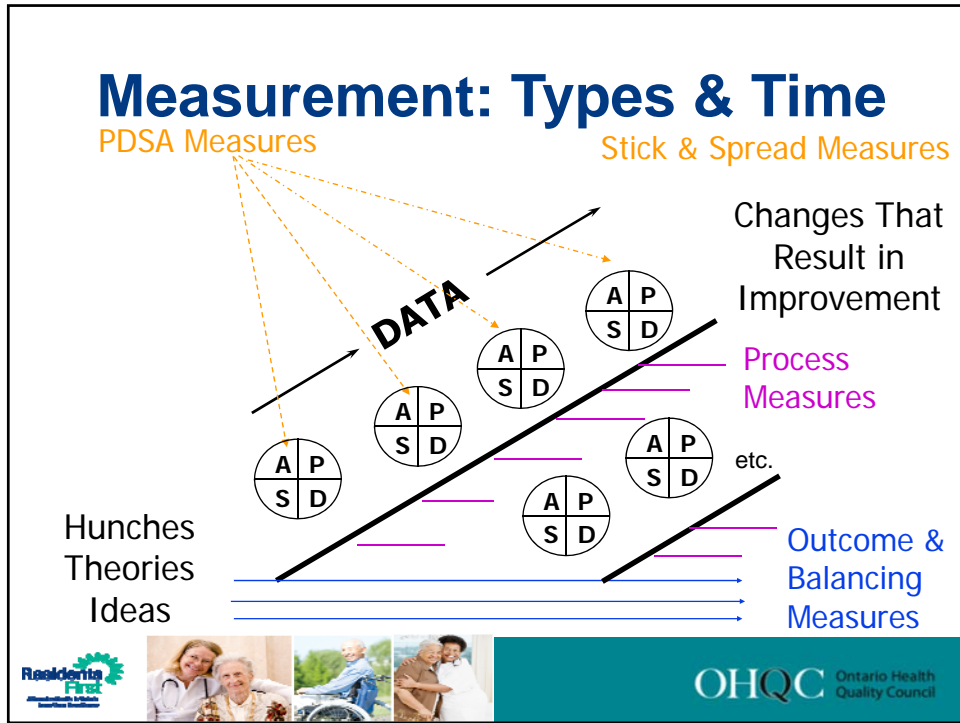
- **Measurement is crucial; measurement without analysis is waste!**
- **What we will cover**
- **How do the topics 'fit' within improvement model**



Uses of measurement:

- **...for judgement**
 - are things good or bad?
- **...for monitoring**
 - are things ticking over nicely?
- **...for improvement**
 - how do we know the impact of the changes we're making?





Outcome Measures

- Outcome measures answer the question: “Are we fulfilling our aim, are things getting better?”
 - Voice of the customer – “residents”
 - Affects entire population of focus
 - Quantitative
 - Sometimes measured relatively less frequently
 - Maybe tied to main aim or particular sub-aims
 - Amenable to a variety of analytic tools including run charts and control charts



Outcome measures examples

- Prevalence of pressure ulcers
- % of pressure ulcers showing improvement
- (# of falls)
- (# of Residents injured/# of Residents who fell)
- Resident and family evaluations of care
- Quality of Life



Process measures

- Process measures answer the question: “Are we doing the things we think will lead to improvement”
 - Measured routinely and frequently
 - Quantitative
 - Run charts
 - Focused on & tied to particular process steps



Process measure examples

- # and % of Residents properly assessed
- # and change concepts tests (i.e. PUAP – 5 concepts)
- treatment plans communicated & understood
- Residents
- % of at-risk residents with daily screening
- Presence of Plan in chart
- # and or % of staff trained in falls protocol, & learning



Balancing measures

- **Balancing Measures** answer the question, “Is something else being affected by our changes (good or bad)?”
 - Affects entire population of focus
 - Quantitative
 - Measured less frequently



Balancing measures examples

- Use of restraints
- Staff satisfaction
- Residents/customer satisfaction
- Re-admission rates
- Costs, efficiency, workload



PDSA measures

- Small-scale
- Qualitative and quantitative data
- Does not affect run charts, typically



Process versus Outcome

- A long-term interest may be to reduce the number of residents requiring hospitalization - (*final outcome*)
- Your goal is to reduce the number of serious falls (*intermediate outcome*)
- Your tests of change may use as its measure the number of residents on contraindicated medications (*process measure*)



What are we doing with measurement?

- **WHILE** we are doing the small test of change we monitor the **PROCESS** to see if it is being done; **AND** we monitor what is happening on the unit when we try this change.
- We also keep monitoring the **OUTCOME** measures (e.g. Injury Rate), to see if the intervention changes the outcome.



Key measurement guidelines

- Support team's aim statement.
- Use existing data collection systems, if available.
- Integrate measurement into the daily routine.
- Plot measures as often as collected.
- Use a balanced set of five to seven measures.



Data collection plan

- What baseline/during/after data should be collected, in what way?
- What is the goal of this data collection?
- What data are you going to collect?
- How will the data be analyzed?
- Will the data be stratified? If so, what will the strata be?
- How much data will be collected?
- When will data collection start and stop?
- Who will collect the data and where?
- Who needs what training to collect these data?
- When will the data collection be piloted?



Moving from measurement to analysis

- Analysis provides answers to questions
- So you need to be clear on your questions!
- Plot data over time.

Tracking a few key measures over time is the single most powerful tool a team can use.



Run Charts

- Purpose: To display process performance over time. Proper interpretation of a run chart will enable proper action and avoidance of “tampering” with operations.
- Display of data points plotted in chronological order
 - where (horizontal)
 - x-axis shows regular consecutive increments of time
- Centre line (either mean or median) is included for use in identifying types of variation
- y-axis (vertical) shows amount or volume of what is being measured/plotted
- Ideally 25 data points are required; 15 might work too



Run Chart Rules (indicators of special cause)

Commonly-used rules

1. Trend/sequence of 5 consecutive points increasing or decreasing (may cross median)
2. Sequence of 6 consecutive points on either side of the median (length of run)



Run Chart Rule1

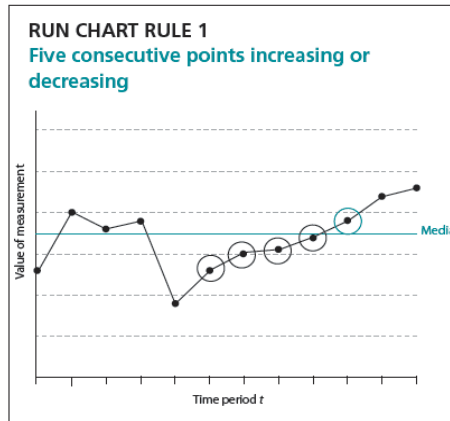


FIGURE 14 | Run Chart Rule 1



Run Chart Rule 2

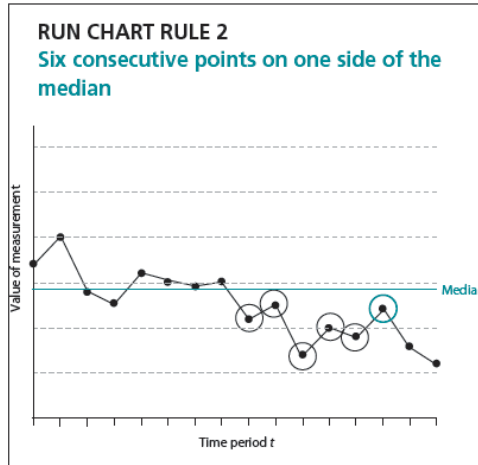
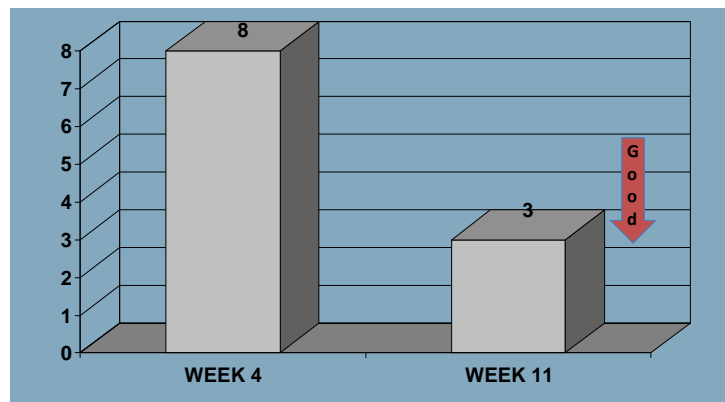


FIGURE 15 | Run Chart Rule 2



“Before and After” vs. “Run Charts” Results are in:

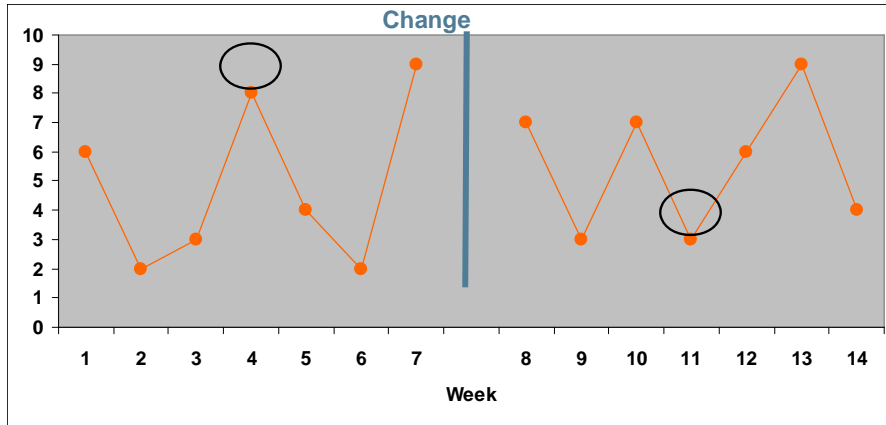


Does this result indicate an improvement?



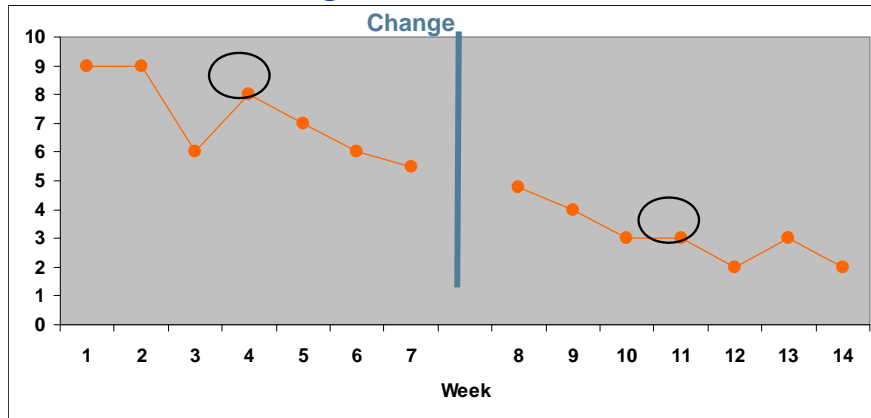
“Before and After” vs. “Run Charts”

Scenario 1: high variability in the system – happened to measure at a high point before and a low point after



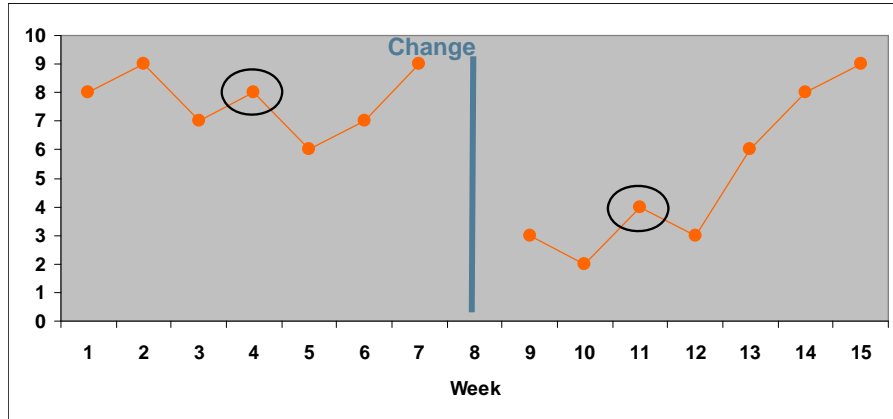
“Before and After” vs. “Run Charts”

Scenario 2: steady improvement was already occurring before the change



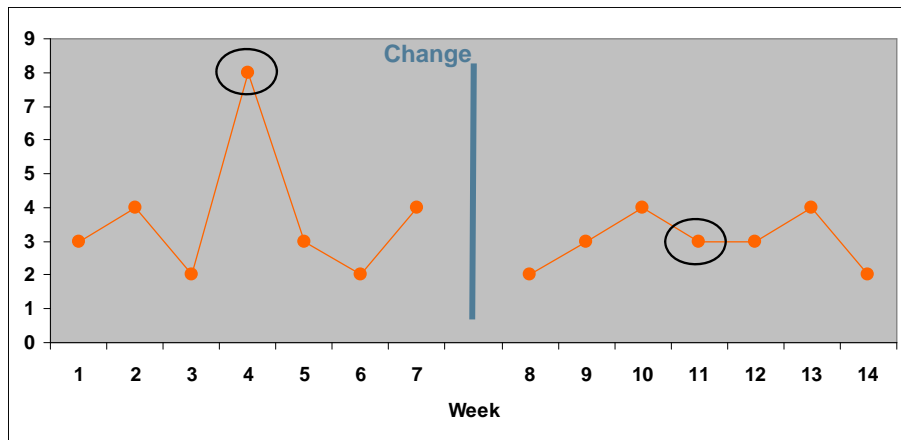
“Before and After” vs. “Run Charts”

Scenario 3: initial improvement but then worsening



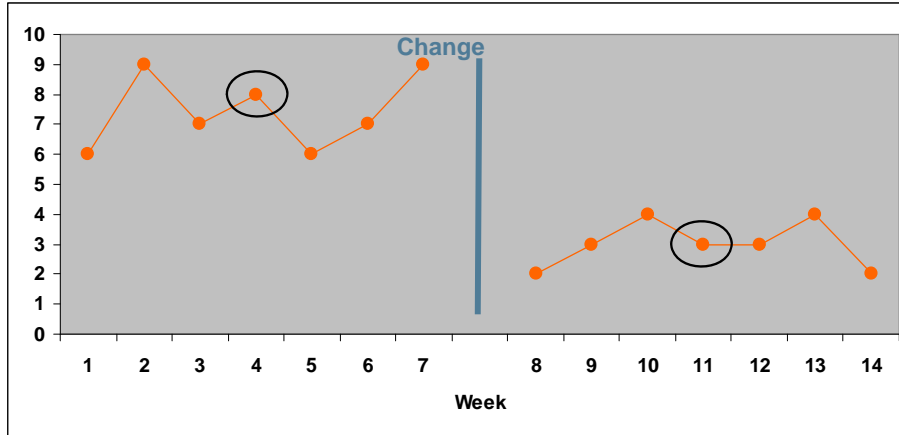
“Before and After” vs. “Run Charts”

Scenario 4: no difference, but special cause variation in week 4

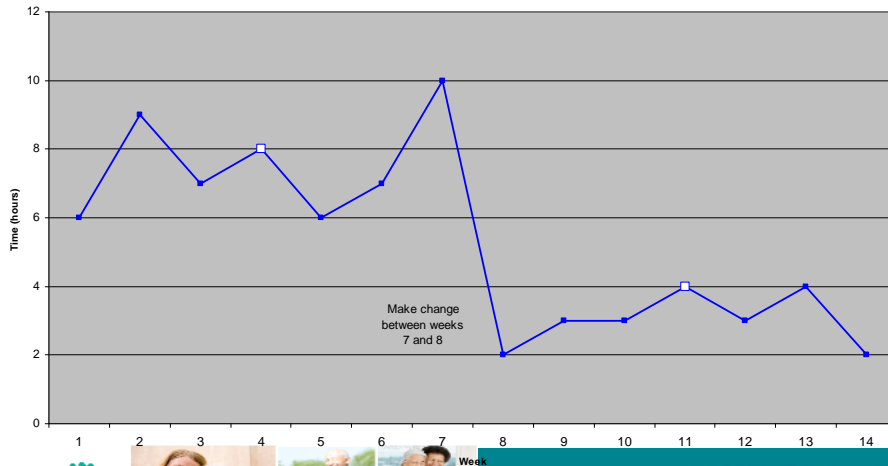


“Before and After” vs. “Run Charts”

Scenario 5: **REAL** improvement



How DO you know if a change is an improvement?





Connect the dots?

- Only connect the data points on a run chart if the data are in time order



North West LHIN-Wide Falls Prevention Collaborative

“Test of Reasonableness”

- **Take the time to look at your data! Does it make sense/is it consistent with what you know?**
- **If not, what are you missing? It’s worth a second look...**



North West LHIN-Wide Falls Prevention Collaborative

Other Helpful Hints

- **Directional arrows can help with interpretation**
- **Target line should be included wherever possible**



Run Chart Advantages

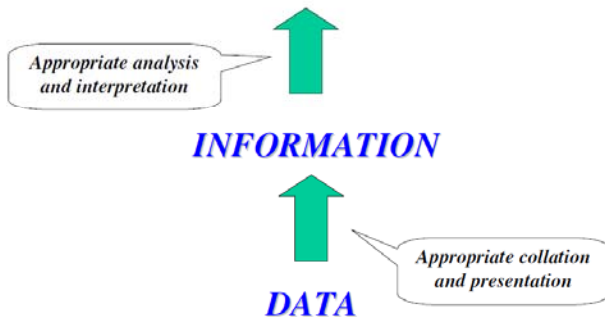
- Simpler to use; No “formula” required
- Easily taught & used by front-line staff & mgrs.
- Considered preliminary analysis tool
- Can easily show amount of variation
- If tests for special causes are done, can help people avoid reacting to individual isolated points (overreacting to variation) as if the data point is special (when it is not)

Disadvantages

- Less sensitive to detecting special causes, as compared to other options (e.g., control charts)



KNOWLEDGE



Turning data into useful information and knowledge
Source: Measurement, Data and Information for Residential Aged Care, An Education Package 2006, The Aged Care Standards Agency Ltd



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Analyzing My System
Presented by: Patsy Morrow



Purpose and Learning Outcomes

- Identify when to use Check Sheet
- Demonstrate the use of Check Sheet



WHEN can Check Sheet be used?

- Check Sheet: Data collection tool to measure frequency of different causes of an issue to assist in identifying opportunities for improvement.



What is a Check Sheet?

- A simple means of data collection
- Used for occurrence of defects or occurrence of observed events.
- Can be used to distinguish between opinion and fact.
- Allows you to determine how often something is happening.



Application:

- Data from an administrator's log is used to create a defect check sheet...



Check Sheet

(Data taken from Administrator's Client Service Form Log)

TYPE OF COMPLAINT January 1-31, 2009													TOTAL
Call Bell response	√	√	√										3
Food Temperatures	√												1
Lost Laundry	√	√	√	√	√	√	√	√	√	√	√	√	12
Foul Odours	√	√	√	√	√	√	√	√	√	√	√	√	11
Staffing levels	√	√											2
Billing Errors	√												1
Weekend Programming	√												1
Wet Clothing	√	√	√	√	√								5
Repositioning	√												1



Check Sheet Exercise

- Create a Check Sheet to collect data you want to monitor related to Lost Laundry concerns at the home.
- Identify common themes
- List the item to be monitored in the left column
- Decide the time period in which data will be collected
- Indicate the source of the data



Exercise Debrief

- Was it easy to identify common problem areas?
- How did the team decide how/where to collect the data they needed?
- Were you able to identify the most common cause of your quality problem?



Purpose and Learning Outcomes

- Identify when to use Pareto
- Understand the Pareto Principle
- Demonstrate the use of Pareto



APPLY The Pareto Principle

What is The Pareto Principle about?



<http://www.clipart.com/clipart-10842.html>



A bit of History



Vilfredo Pareto (1848-1923)

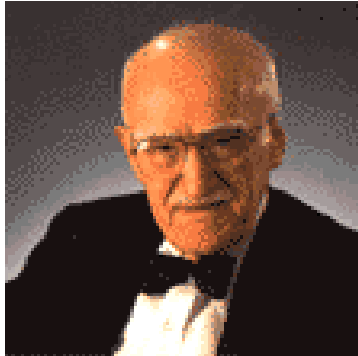
Italian Economist, Sociologist and Philosopher.

In 1906:

Pareto found using his formula that 80% of the wealth in Italy belonged to 20% of the population



Joseph Juran “A Quality Management Pioneer”



- The vital few and the trivial many
- 80/20 rule.
- 20% of something is always equal to 80% of the results.



80/20 Rule Have you ever heard?

- “80% of our sales comes from 20% of our customers”
- “80% of our complaints are made by 20% of our clients”
- Others????



What is the 80/20 lesson?

Focus on the “vital few” instead of the trivial “useful many”



The Pareto Chart

PURPOSE:

To graphically display the relative importance of the differences between groups of data



Example: Back to Willow Springs Home

Lets have a look at the information from the Check Sheet related to complaints and put into the Pareto chart



[http://www.1clipart.com/browse.php?p=buildings_-_housesj2_d_\(cartoon\)&s=1](http://www.1clipart.com/browse.php?p=buildings_-_housesj2_d_(cartoon)&s=1)



Check Sheet

(Data taken from Administrator's Client Service Form Log)

TYPE OF COMPLAINT													TOTAL
January 1-31, 2009													
Call Bell response	√	√	√										3
Food Temperatures	√												1
Lost Laundry	√	√	√	√	√	√	√	√	√	√	√	√	12
Foul Odours	√	√	√	√	√	√	√	√	√	√	√	√	11
Staffing levels	√	√											2
Billing Errors	√												1
Weekend Programming	√												1
Wet Clothing	√	√	√	√	√								5
Repositioning	√												1



Where do we focus to achieve the greatest improvement?

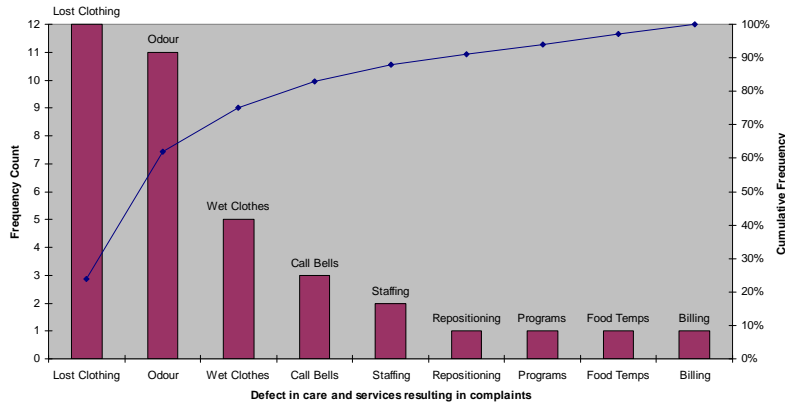
DEFECT OR DEFECT CAUSE	Frequency	% Frequency	% Cumulative frequency
Lost Clothing	12	32%	32%
Odour	11	30%	62%
Wet Clothes	5	13%	75%
Call Bells	3	8%	83%
Staffing	2	5%	88%
Repositioning	1	3%	91%
Programs	1	3%	94%
Food Temps	1	3%	97%
Billing	1	3%	100%
TOTAL	37	100%	



Pareto Chart

What defects in care and services contribute to client complaints that may result in potential decreased satisfaction in January 2009?

Pareto Chart: Client Concerns/Complaints January 2009



Pareto Exercise: Lost Laundry

- Refer to Check Sheet created in previous exercise.
- Follow Steps to Creating a Pareto carefully and transfer information from Check Sheet Tool to more detailed Check Sheet with columns for recording percentages.
- Use provided blank Pareto Sheet to draw diagram



Steps to creating a Pareto

- Step 1. Use data from Check Sheet
- Step 2. Put them on a chart in descending order and (left to right)
- Step 3. Calculate the percentage frequency for each item.
- Step 4. Calculate the cumulative frequency.
- Step 5. Draw the Pareto chart.

Answer the question: Which are the vital few to focus on?



Exercise Debrief

- Can you see which few problems contribute most of the problem of lost laundry?
- Can the Pareto help you in providing rationale for the prioritization of your improvement efforts?
- Do you feel that the impact of working on the most frequent cause of your lost laundry problems would have the biggest impact for the overall problem?



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The Amazing Race
Presented by: Lillette Patel



Your Quality of Life is Our First Priority

Improvement Facilitation: The Work Begins
Presented by: Patsy Morrow



Connecting With Your Improvement Team

Connect with a Team Leader or consider recruiting a co-leader if you are in a dual role:

- Support the group to make the most of the opportunities related to clinical guidance, resources, and building continuous quality improvement
- Facilitate team activities that will come up through the collaborative
- Help to plan team meetings and help team identify next steps
- Trouble shoot and support measurement work; help team to figure out the best way to capture “just enough” information to guide the work



The Work Begins:



Resident First Collaborative Team Participation List
Which Collaborative Group are you joining? (Please check one)

- Central East LHIN
- Hamilton Niagara Haldimand Brant LHIN
- Mississauga Halton LHIN

Home Name: _____

Name of Participant	Title	Email	Office Phone	Cell Phone

Which person named above is the Team Leader? _____

Optional: Which person above is trained in Quality Improvement Facilitation (if any)? _____

Will your Team require accommodations when attending the Collaborative events?

- Yes
- No
- Maybe

If you have questions, please contact Karen O'Brien at 905-427-5497/1-866-804-5446 X 212 or via email at karen.obrienmonaghan@lhins.on.ca.

Create the Team Participants List:



Working With Your Improvement Team

- If you are a NEW Collaborative Team: have your improvement team participate in the first Residents First teleconference
 - March 4, 2010
 - Hamilton Niagara Haldimand Brant LHIN: 12:00 – 1:00
 - Central East LHIN: 1:30 – 2:30
 - Mississauga Halton LHIN: 3:00 – 4:00



Team Storyboards

- Teams will be invited to create a poster board (storyboard) in preparation for attending Learning Session 1 for their collaborative illustrating:
 - Who they are
 - What they want to achieve
 - Key measures they have
- Meet with teams regularly to understand their context and anticipate how they can be supported.



Working With Your Improvement Team

- A representative from ALL participating Residents First homes will receive an invitation to an additional teleconference:
 - March 9, 2010
- This call will provide all teams with an overview of all Residents First related activities including delivery streams, upcoming dates, etc.



Upcoming Collaborative Dates

- The upcoming collaborative dates are:
- **NEW Collaborative Teams:**
 - Mississauga Halton LHIN: March 22/23
 - Hamilton Niagara Haldimand Brant LHIN: March 25/26
 - Central East LHIN: March 29/30
- **Legacy Collaborative Teams:**
 - Bridges to Care (Kingston): March 29/30
 - PUAP: TBD



Working With Your Improvement Team

Measurement Data for Collaborative Learning Session 1:

Emergency Department Visits Form

Outcome Measures submitted monthly

Organization/Unit Name: _____

Month (submit updated data at the end of each month)	# of Emergency Department Visits
February 1-28, 2010 (Baseline)	
March 1-31, 2010	
April 1-30, 2010	
May 1-31, 2010	
June 1-30, 2010	
July 1-31, 2010	
August 1-31, 2010	
September 1-30, 2010	
October 1-31, 2010	
November 1-30, 2010	
December 1-31, 2010	
January 1-31, 2011	
February 1-28, 2011	
March 1-31, 2011	
April 1-30, 2011	

Update this data onto the website to track your progress and print a current chart.

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Working With Your Improvement Team

Measurement Data for Collaborative Learning Session 1:

Falls Measures Worksheet

Percentage of Harmful Falls
Code: FALLS_OUTCOME_3
Fall: an unplanned descent to the floor

Organization/Unit Name: _____

[\[Place holder for Fall Injury Rating System, Categories 1-6\]](#)

Numerator: # of Falls Categorized as 2, 3, 4, 5 or 6 in Severity of Harm Scale
Denominator: Total # of Falls

Month	Total # of Falls as Categorized on the Severity Scale						Total # of Falls
	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	
February 1-30, 2010							
March 1-31, 2010							
April 1-30, 2010							
May 1-31, 2010							
June 1-30, 2010							
July 1-31, 2010							
August 1-31, 2010							
September 1-30, 2010							
October 1-31, 2010							
November 1-30, 2010							
December 1-31, 2010							
January 1-31, 2011							
February 1-28, 2011							
March 1-31, 2011							
April 1-30, 2011							

Update this data onto the website to track your progress and print a current chart.

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Working with Your Improvement Team

- Measurement Data for Collaborative Learning Session 1:

Pressure Ulcers Measures Worksheet

Prevalence Rate
Code: PU_Outcome_1

Organization/Unit Name: _____

Used to get denominator for each Prevalence Category

Numerator: # of Residents with Stage 1 - 4 Pressure Ulcers
Denominator: Total # of Residents in the home on the last day of the Month

Month	Pressure Ulcer Stage 1	Pressure Ulcer Stage 2	Pressure Ulcer Stage 3	Pressure Ulcer Stage 4	Total # of Residents in the home on the last day of the Month
February 1-28, 2010 (Baseline)					
March 1-31, 2010					
April 1-30, 2010					
May 1-31, 2010					
June 1-30, 2010					
July 1-31, 2010					
August 1-31, 2010					
September 1-30, 2010					
October 1-31, 2010					
November 1-30, 2011					
December 1-31, 2011					
January 1-31, 2011					
February 1-28, 2011					
March 1-31, 2011					
April 1-30, 2011					
July 1-31, 2010					

Update this data onto the website to track your progress and print a current chart.

[Website address: pucah.org](#)



Working with Your Improvement Team

- Measurement Data for Collaborative Learning Session 1:

Continance Measures Worksheet

Total # of Bladder Incontinence Episodes in the First 7 Days of the Previous Month
Code: CONT_OUTCOME_1

Organization/Unit Name: _____

Numerator: Total # of Bladder Incontinence Episodes in the First 7 Days of the Previous Month
Denominator: Total # of All Residents

Month	Total # of bladder incontinence episodes in the first 7 days of the previous month*	# of All Residents
February 1-28, 2010 (Baseline)		
March 1-31, 2010		
April 1-30, 2010		
May 1-31, 2010		
June 1-30, 2010		
July 1-31, 2010		
August 1-31, 2010		
September 1-30, 2010		
October 1-31, 2010		
November 1-30, 2011		
December 1-31, 2011		
January 1-31, 2011		
February 1-28, 2011		
March 1-31, 2011		



Working With Your Improvement Team

Measurement Data for Collaborative Learning Session 1:

Consistency of Resident to PSW Assignment

Outcome Measures submitted monthly

Organization/Unit Name: _____

Month (submit updated data at the end of each month)	# of PSW assigned to each resident, all shifts
February 1-28, 2010 (Baseline)	
March 1-31, 2010	
April 1-30, 2010	
May 1-31, 2010	
June 1-30, 2010	
July 1-31, 2010	
August 1-31, 2010	
September 1-30, 2010	
October 1-31, 2010	
November 1-30, 2011	
December 1-31, 2011	
January 1-31, 2011	
February 1-28, 2011	
March 1-31, 2011	
April 1-30, 2011	

Update this data onto the website to track your progress and print a current chart.
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More Support

- LEAN team support is being led by Valerie Whitt, and information will be forthcoming from your Residents First LEAN Team
- Legacy Teams will also be supported by a different stream, and your Residents First Legacy Team will be contacting you.
- NEW Collaborative Teams, you will also be contacted by the Lead IF for your LHIN. Please ensure that you keep in contact with this person, and also that you use opportunities to connect with other teams in your LHIN



Theory Into Action

- Take a few minutes to Role Play introducing yourself to the Improvement Team you will be working with to:
 - Familiarize yourself with the team
 - Discuss possible sources for data collection
 - Begin to prep for LS1 with a storyboard



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