BC PERINATAL HEALTH PROGRAM

Optimizing Neonatal, Maternal and Fetal Health

Data Reporting, Indicator Monitoring and Process Control Charting

Best Practices in Rural Maternity Care Service Outcomes Reporting

May 2nd 2008

PRESENTATION OUTLINE

1. BCPHP/BCPDR Background
2. Quality improvement and measurement
3. Run charts
4. Process control charts
5. How do I compare to other similar groups?
6. Putting it all together - Hospital variance reporting

BC PERINATAL HEALTH PROGRAM (BCPHP) MANDATE

The mandate of the BCPHP is to optimize neonatal, maternal and fetal health in BC by:

- **Collection and analysis of perinatal data**
- **Development of clinical practice guidelines**
- **Promotion and facilitation of inter-professional outreach education**
- **Consultation and liaison with providers and facilities**
- **Promotion of perinatal care networks within the province**
- **Provincial Specialized Perinatal Services**

DATA SOURCE – BC PERINATAL DATABASE REGISTRY

Medical Record

Manual/Electronic entry (70%)

~ 300 data elements

CIHI (30%)

Hospital Perinatal Database

Home Births

Data Collection by BCPDR at hospital

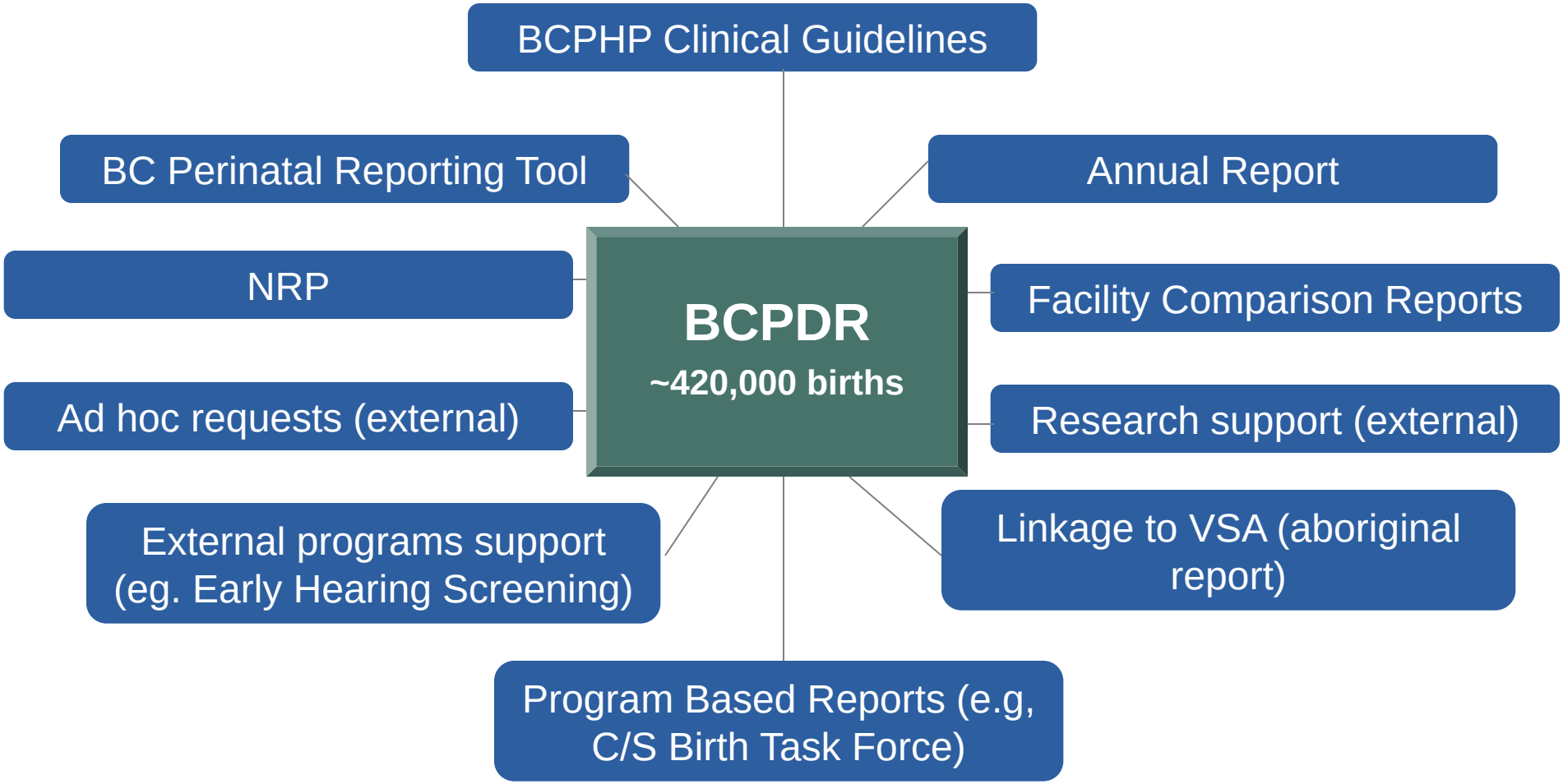
BC Vital Stats

BC Ministry of Health

BCPDR

~420,000 births

BCPDR OUTPUTS



HEALTHCARE QUALITY IMPROVEMENT

‘A broad range of activities of varying degrees of complexity and methodological and statistical rigour through which health care providers develop, implement, and assess small-scale interventions and identify those that work well and implement them more broadly in order to improve clinical practice’

The Ethics of Improving Health Care Quality & Safety: A Hastings Center/AHRQ Project, Mary Ann Bailey, PhD, Associate for Ethics and Health Policy, The Hastings Center, Garrison, New York, July 2006.

BC FACILITY COMPARISON REPORTS – Data Tables

B.C. PERINATAL FACILITY COMPARISON REPORT - MOTHER DELIVERY - PART 1 (500+ Births)*
FISCAL YEAR - April 01, 2004 to March 31, 2005

FACILITY TABLE

Template

(2500+ Births Peer Group)			Labour			Vaginal Delivery				C/Section Delivery			
						Spontaneous		Assisted		Elective		Emergent	
Parity	Total Deliveries	%		#	%	#	%	#	%	#	%	#	%
Nullip	0	0.0%	Spontaneous	0	0.00%	0	0.00%	0	0.00%	N/A	N/A	0	0.00%
			Induced	0	0.00%	0	0.00%	0	0.00%	N/A	N/A	0	0.00%
			None	0	0.00%	N/A	N/A	N/A	N/A	0	0.00%	0	0.00%
>=1	0	0.0%	Spontaneous	0	0.00%	0	0.00%	0	0.00%	N/A	N/A	0	0.00%
			Induced	0	0.00%	0	0.00%	0	0.00%	N/A	N/A	0	0.00%
			None	0	0.00%	N/A	N/A	N/A	N/A	0	0.00%	0	0.00%
Total	0	100.00%		0	100.00%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

PEER GROUPS TABLE

500-999 Births (7 Sites)

			Labour			Vaginal Delivery				C/Section Delivery			
						Spontaneous		Assisted		Elective		Emergent	
Parity	Total Deliveries	%		#	%	#	%	#	%	#	%	#	%
Nullip	1,961	43.22%	Spontaneous	1,279	65.22%	727	37.07%	236	12.03%	N/A	N/A	316	16.11%
			Induced	553	28.20%	250	12.76%	104	5.30%	N/A	N/A	199	10.15%
			None	129	6.58%	N/A	N/A	N/A	N/A	93	4.7%	36	1.84%
>=1	2,576	56.78%	Spontaneous	1,551	60.21%	1,336	51.82%	80	3.11%	N/A	N/A	136	5.28%
			Induced	541	21.00%	463	17.97%	23	0.89%	N/A	N/A	55	2.14%
			None	484	18.79%	N/A	N/A	N/A	N/A	452	17.55%	32	1.24%
Total	4,537	100.00%		4,537	100.00%	2,775	61.16%	443	9.76%	545	12.01%	774	17.06%

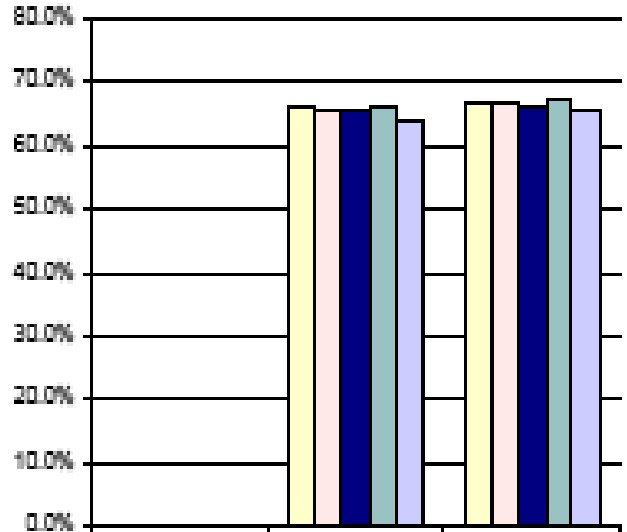
1000-2499 Births (10 Sites)

			Labour			Vaginal Delivery				C/Section Delivery			
						Spontaneous		Assisted		Elective		Emergent	
Parity	Total Deliveries	%		#	%	#	%	#	%	#	%	#	%
Nullip	6,294	46.72%	Spontaneous	4,314	68.54%	2,615	41.55%	795	12.63%	N/A	N/A	904	14.36%
			Induced	1,551	24.64%	710	11.28%	255	4.05%	N/A	N/A	586	9.31%
			None	429	6.82%	N/A	N/A	N/A	N/A	310	4.9%	119	1.89%
>=1	7,177	53.28%	Spontaneous	4,621	64.39%	3,976	55.40%	221	3.08%	N/A	N/A	424	5.91%
			Induced	1,150	16.02%	978	13.63%	72	1.00%	N/A	N/A	100	1.39%
			None	1,406	19.59%	N/A	N/A	N/A	N/A	1,260	17.55%	146	2.03%
Total	13,471	100.00%		13,471	100.00%	8,279	61.46%	1,343	9.97%	1,570	11.65%	2,279	16.92%

BC FACILITY COMPARISON REPORTS – Graphs

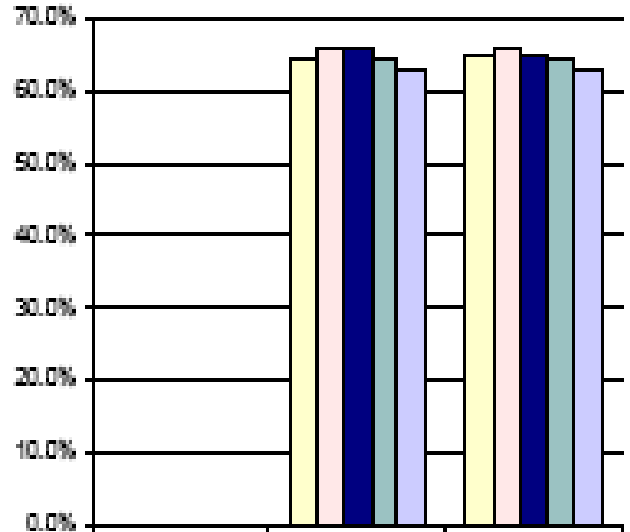
B.C. PERINATAL COMPARISON REPORT - MOTHER DELIVERY - PART 1

SPONTANEOUS LABOUR - NULLIP
(% OF TOTAL NULLIP DELIVERIES)
PEER GROUP 2500+



	Template	PEER 2500+	PROVINCIAL BC (Facility Births)
2001/02	0.00%	66.10%	66.83%
2002/03	0.00%	66.94%	66.88%
2003/04	0.00%	66.56%	66.28%
2004/05	0.00%	66.22%	67.46%
2005/06	0.00%	63.75%	65.59%

SPONTANEOUS LABOUR - PARITY >=1
(% OF TOTAL MULTIP DELIVERIES)
PEER GROUP 2500+

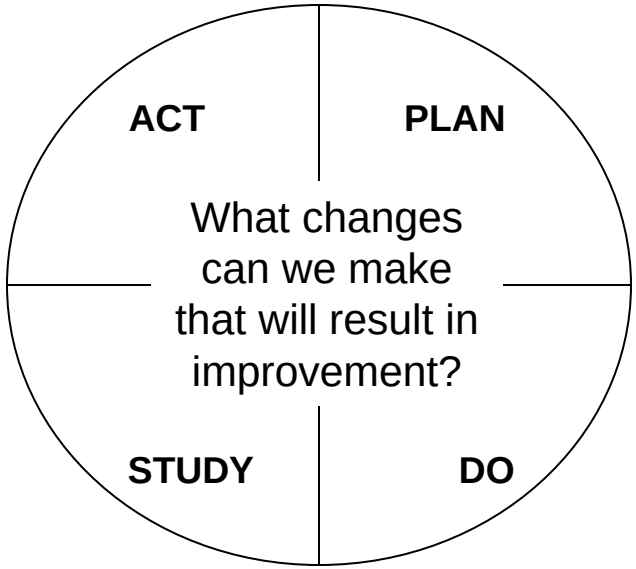


	Template	PEER 2500+	PROVINCIAL BC (Facility Births)
2001/02	0.00%	64.86%	65.11%
2002/03	0.00%	66.08%	65.95%
2003/04	0.00%	66.10%	65.14%
2004/05	0.00%	64.66%	64.52%
2005/06	0.00%	63.12%	63.01%

MODEL FOR RAPID-CYCLE IMPROVEMENT

What are we trying to accomplish? AIM

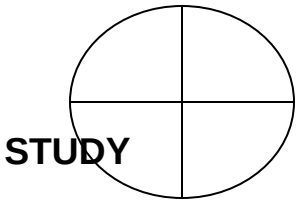
How will we know that a change is an improvement? CURRENT KNOWLEDGE



CYCLE FOR LEARNING AND IMPROVEMENT (PDSA CYCLE)

Quality Improvement Methods in Clinical Medicine. Plsek, Paul. Pediatrics 1999;103;203-214

FOCUS ON MEASUREMENT



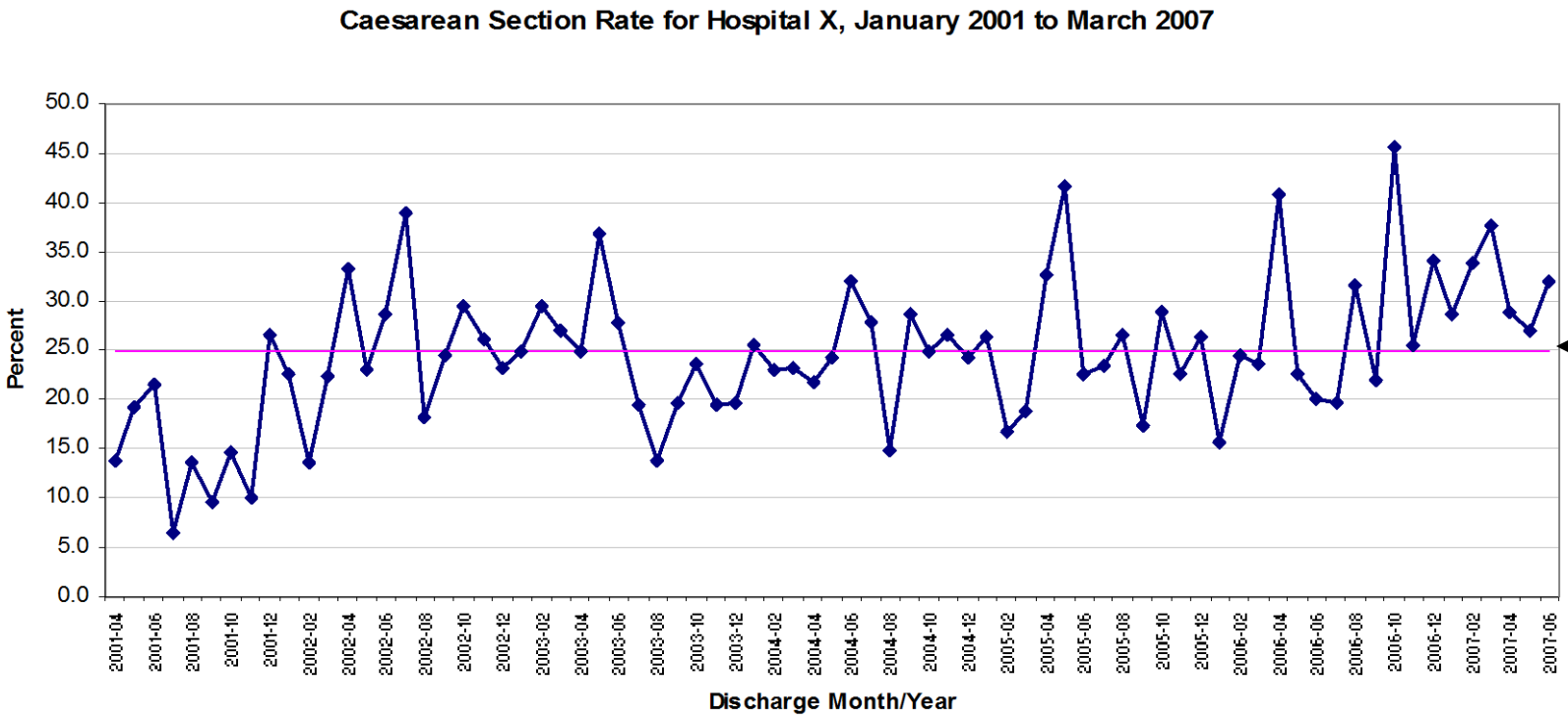
Measurement is:
- part of the 'Study' in the PDSA cycle
- provides feedback loop
- signals need for change or accomplishment of change (goal attainment)

Indicator monitoring examples:
- Run chart
- Control charts – trending one facility (or catchment area) over time
- Control charts – comparing facilities (or catchment area) to other 'like' facilities or catchment areas

Similar characteristics for each:
- Simple (relevant) aggregations – hospital, resident, catchment area – which is most useful?
- One indicator at a time
- Frequent data points

RUN CHART

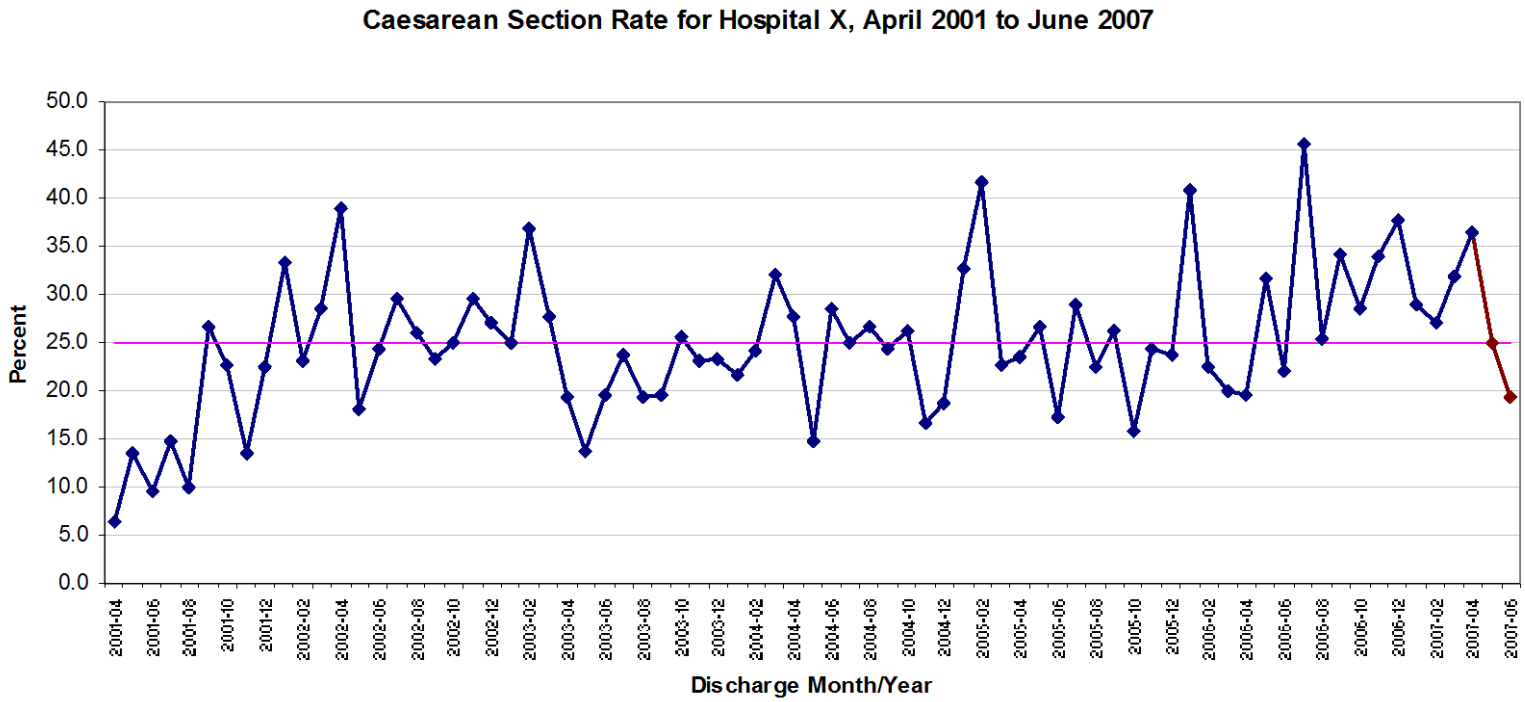
A run chart is a series of data points that can compare one group to itself over time and includes a mean or median value



Mean CS rate for Hospital X between January 2001 and March 2007 **(24.8%)**

RUN CHART – ADDING MORE DATA

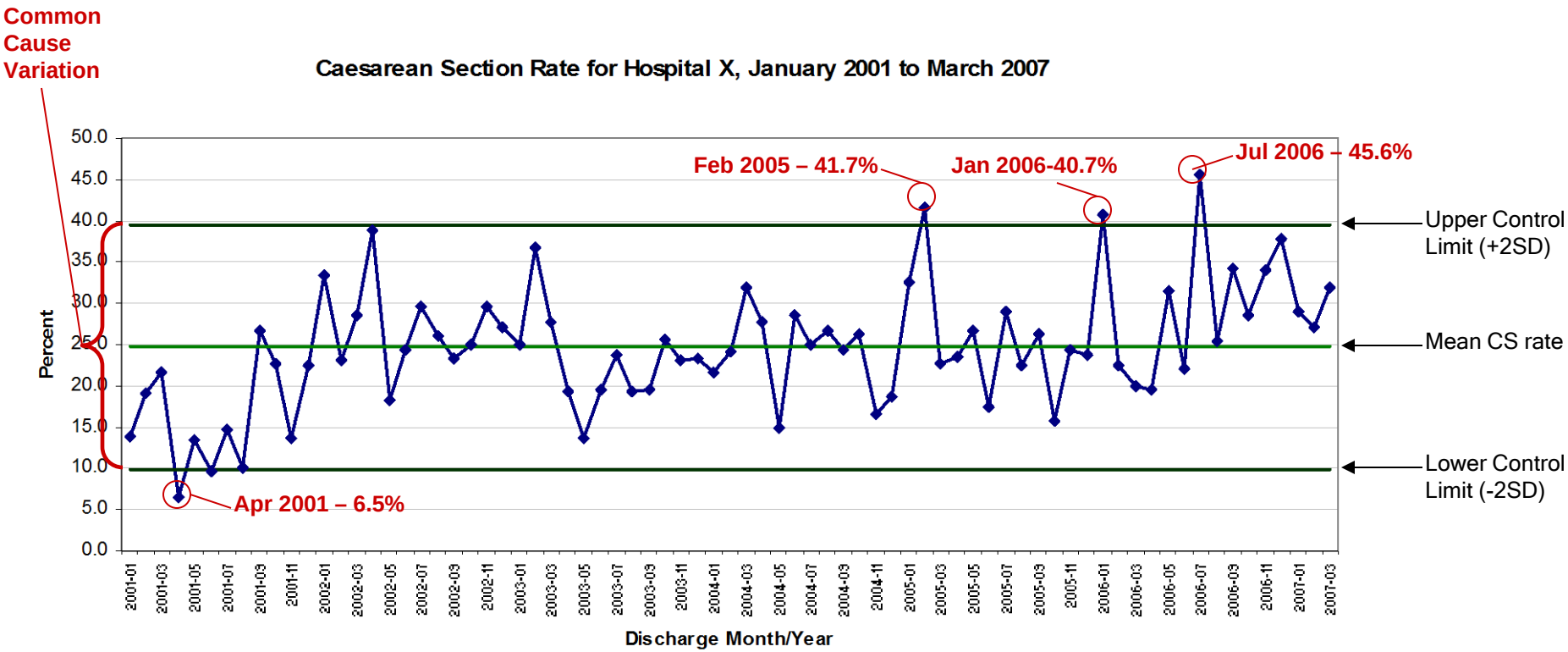
New values can be added to a run chart each reporting period (e.g. weekly, monthly, quarterly, annually, etc), depending on frequency of event and availability of data



Mean CS rate for Hospital X between January 2001 and June 2007 **(24.9%)**

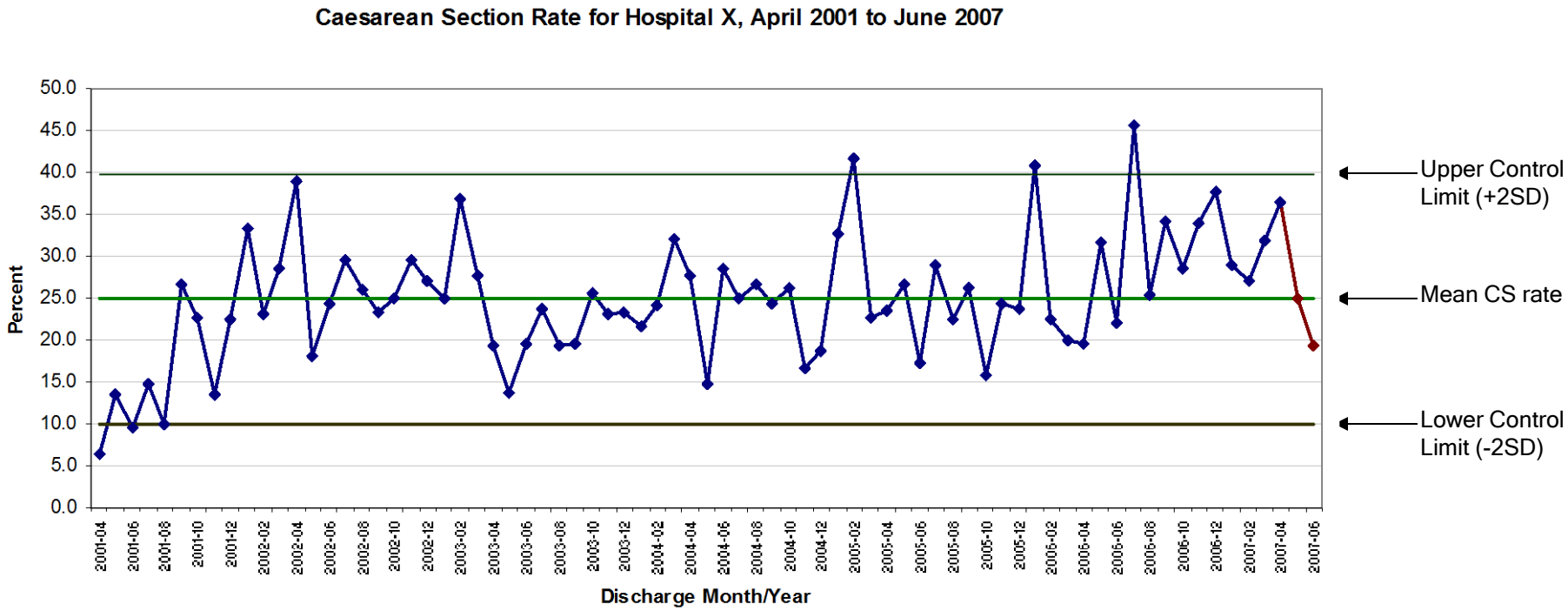
CONTROL CHART

A process control chart is a series of data points (e.g., a run chart) with an overlay of statistical controls (e.g., mean, upper control limit, lower control limit)



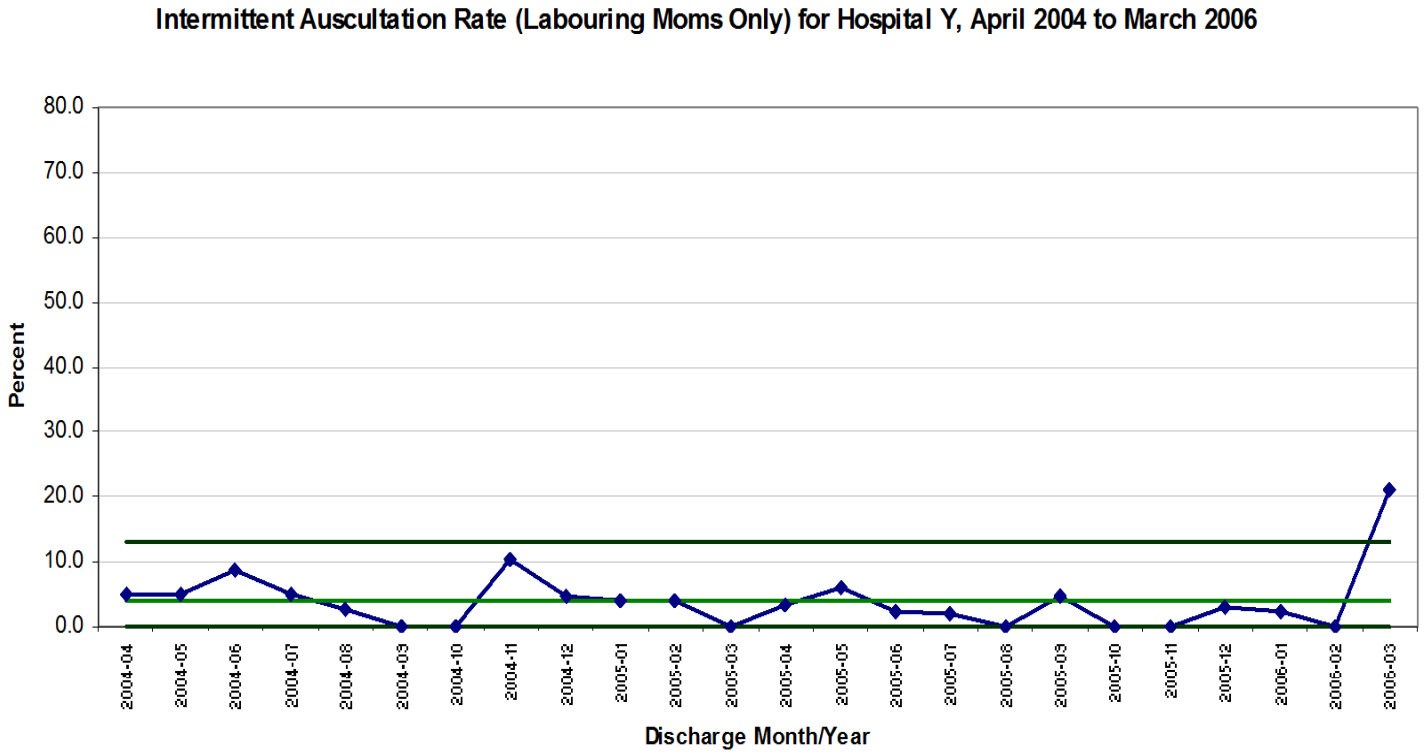
CONTROL CHART – ADDING MORE DATA

A process control chart is a series of data points (e.g., a run chart) with an overlay of statistical controls (e.g., mean, upper control limit, lower control limit)



CONTROL CHART – INTERMITTENT AUSCULTATION

Intermittent auscultation (only) – change to an existing data field beginning in April/04



Upper Control Limit (13.2)

Mean (4.6)

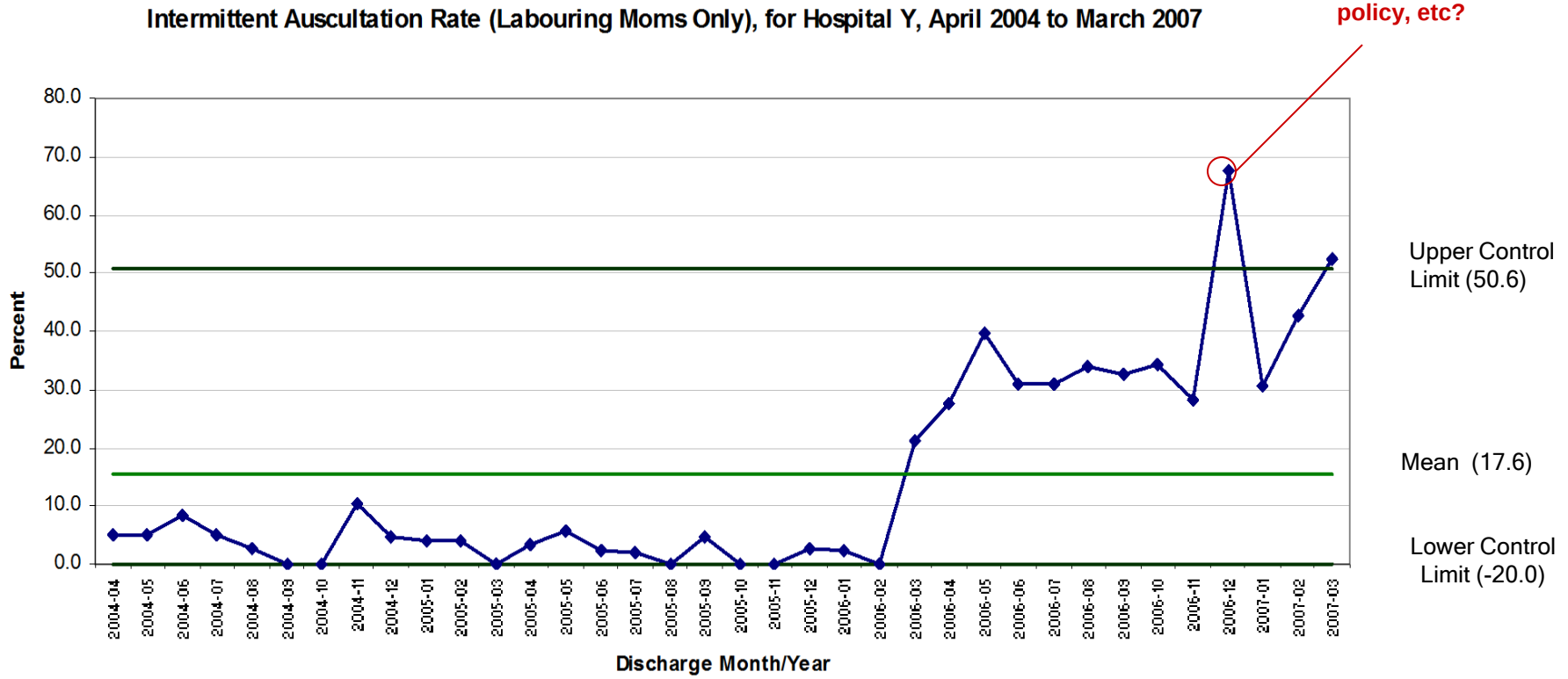
Lower Control Limit (-5.1)

CONTROL CHART - INTERMITTENT AUSCULATION

New values (one fiscal year) added

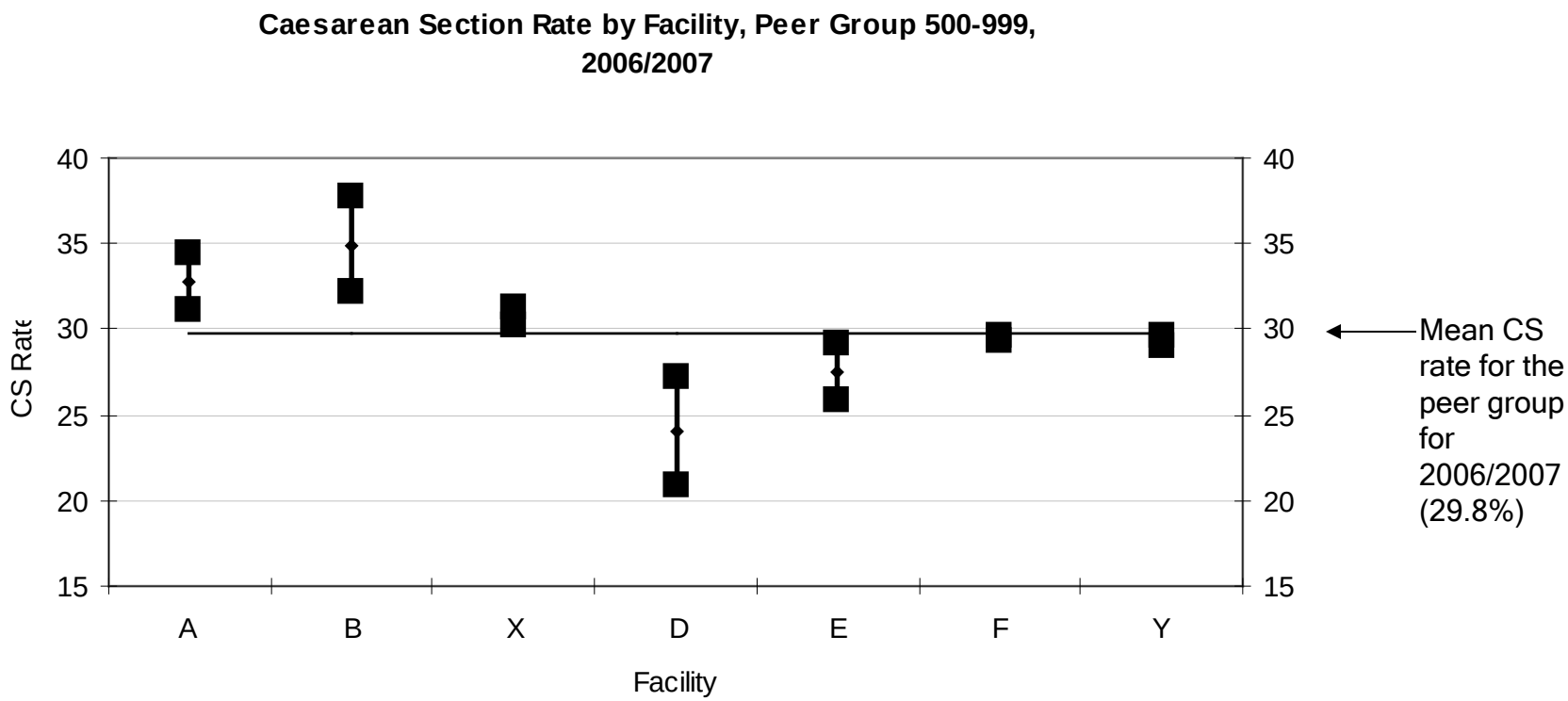
Outside of control limit, non-random cause:

New staff member, workshop, change in policy, etc?



COMPARING PEER GROUP FACILITIES AT ONE POINT IN TIME

Previous examples show how one facility performs over time; but, how do facilities compare to each other?



PUTTING IT TOGETHER

Determine:

- Indicators of interest to track
- Frequency of reporting (monthly, quarterly, etc) – can vary by indicator
- Population – e.g., report by hospital, resident LHA, catchment area, service level, etc.
- Comparison group

Can compile a score sheet or report card that identifies trends, flags, and comparisons

EXAMPLE: VARIATION FLAGGING SUMMARY REPORT

Detailed report for each hospital or catchment area with:

- Trend over time for each selected indicator
- Comparison to peer group or other similar population
- Identification of any flags
- Data detail as needed

VARIATION FLAGGING SUMMARY REPORT

DRAFT

HOSPITAL: Hospital Y - My Favourite Health Authority

DATE RANGE: January 1 - March 31, 2007

Indicator	Flag	Symbol	Target (Peer Group or Provincial or ?)
A. MATERNAL			
A1. Population			
INTERVENTIONS			
A2. Caesarean Section Deliveries	Red	▲	20%
A3. Assisted Vaginal Deliveries	Green	■	5%
A4. Spontaneous Vaginal Deliveries	Light Green	◊	75%
A5. Induction of Labour	Yellow	●	10%
A6. Attempted VBAC	Orange	♣	60%
ADMINISTRATIVE			
A7. Postpatum Average Length of Stay - Vaginal	Green	■	< 48 hours
A8. Postpatum Average Length of Stay - C/S	Yellow	●	< 72 hours
B. NEWBORN			
B1. Population			
B2. Low Birth Weight (<2500 grams)	Red	▲	5%
B3. Apgar <7 at 5 Minutes	Yellow	●	2%
B4. IPPV/ETT	Orange	♣	2%
B5. Stillbirth	Green	■	0%

EXAMPLE: VARIATION FLAGGING DETAILED REPORT

Hospital Y
My Favourite Health Authority

Current Quarter: Jan/Feb/Mar 2007
Previous Quarter: Oct/Nov/Dec 2006

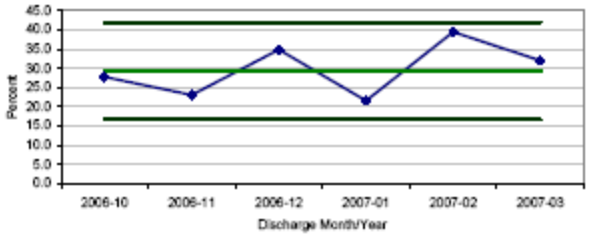
A1. Total maternal discharges:

	Hospital	Peer Group	BC
Previous Quarter	131	1,145	9,980
Current Quarter	139	1,139	9,780
Trend	INCREASING	DECREASING	DECREASING

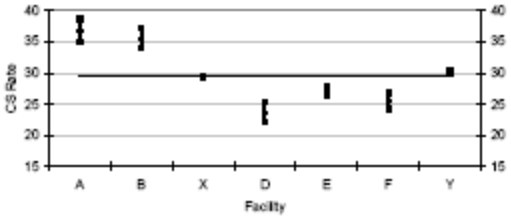
A2. Caesarean section rate

	Hospital	Peer Group	BC
Previous Quarter	28.2%	30.1%	31.3%
Current Quarter	30.2%	29.7%	30.7%
Trend	INCREASING	DECREASING	DECREASING

Caesarean Section Rate for Hospital Y, October 2006 to March 2007



Caesarean Section Rate by Facility, Peer Group 500-999,
January to March 2007



Conclusions:

- Caesarean section rates at hospital Y do not vary significantly in the last six months (e.g. they are within the control limits
- Hospital Y has a higher CS rate than the peer group rate for the current quarter (this difference is significant)

BC PERINATAL HEALTH PROGRAM

Optimizing Neonatal, Maternal and Fetal Health