

Supplementary Material

Implementation of a data-driven quality improvement program in primary care for patients with coronary heart disease: a mixed methods evaluation of acceptability, satisfaction, barriers and enablers

Nashid Hafiz^{A,}, Karice Hyun^{A,B}, Qiang Tu^A, Andrew Knight^{C,D}, Clara K. Chow^{F,G}, Charlotte Hesp^E, Tom Briffa^H, Robyn Gallagher^I, Christopher M. Reid^{J,K}, David L. Hare^L, Nicholas Zwar^M, Mark Woodward^{N,O}, Stephen Jan^N, Emily R. Atkins^N, Tracey-Lea Laba^P, Elizabeth Halcomb^O, Tracey Johnson^R, Deborah Manandi^A, Tim Usherwood^N, and Julie Redfern^{A,N}*

^A School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia.

^B Department of Cardiology, Concord Hospital, ANZAC Research Institute, Concord, NSW, Australia.

^C Primary and Integrated Care Unit, South Western Sydney Local Health District, Sydney, NSW, Australia.

^D School of Public Health and Community Medicine, University of New South Wales, Kensington, NSW, Australia.

^E The University of Notre Dame, School of Medicine, Sydney, NSW, Australia.

^F Department of Cardiology, Westmead Hospital, Westmead, NSW, Australia.

^G Westmead Applied Research Centre, Faculty of Medicine and Health, University of Sydney, Westmead, Westmead, NSW, Australia.

^H School of Population and Global Health, The University of Western Australia, Crawley, WA, Australia.

^I Sydney Nursing School, Faculty of Medicine and Health, University of Sydney, Camperdown, NSW, Australia.

^J School of Population Health, Curtin University, Bentley, WA, Australia.

^K School of Public Health and Preventive Medicine, Monash University, Melbourne, Vic., Australia.

^L The University of Melbourne and Austin Health, Melbourne, Vic., Australia.

^M Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Qld, Australia.

^N The George Institute for Global Health, University of New South Wales, Barangaroo, NSW, Australia.

^O The George Institute for Global Health, School of Public Health, Imperial College London, Oxford, Oxfordshire, UK.

^P Clinical and Health Sciences, University of South Australia, Adelaide, SA, Australia.

^Q School of Nursing, University of Wollongong, Wollongong, NSW, Australia.

^R Inala Primary Care, Inala, Qld, Australia.

*Correspondence to: Nashid Hafiz School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia Email: nashid.hafiz@sydney.edu.au

Supplementary Table S1: The 12 CHD measures for QUEL study

1. The number of clients that are coded with a diagnosis matching the CHD definition
2. The proportion of clients with CHD where low density lipoprotein (LDL) has been measured within the previous 12 months
3. The proportion of clients with CHD whose most recent LDL result was less than 2.0 mmol/L
4. Proportion of clients with CHD with a recorded blood pressure (BP) reading taken within the previous 12 months
5. Proportion of clients with CHD whose most recent BP reading, taken within the previous 12 months, was less than or equal to 130/80 mmHg
6. Proportion of clients with CHD whose smoking status has been recorded
7. Proportion of clients with CHD recorded as a current smoker
8. Proportion of clients with CHD who are currently prescribed an anti-platelet agent
9. Proportion of clients with CHD who are currently prescribed a statin
10. Proportion of patients with CHD who are currently prescribed an ACE inhibitor or ARB
11. The proportion of clients with CHD with MBS Items 721 OR 732 claimed
12. Proportion of clients with CHD who have an influenza vaccination recorded within the previous 12 months

S2 Table: Participants' position and their participation in the process evaluation

Category of participants providing feedback via the data sources	No of participants in each category	Leading workshop surveys	End-of-program evaluation survey	Semi-structured interviews
GP/GP register/ Clinical Director/ Principal GP	21	19	17	2
PM/ Assistant Practice Manager/ PM who is a nurse	21	18	12	4
Practice Nurse/ Registered Practice Nurse/ Nurse Coordinator	10	10	6	2
Other Admin and Research Officer	2	2	2	Nil
PHN staff	10	10	Nil	1

GP: General practitioner. PM: Practice manager, PHN: Primary health network

QUEL Heart Disease Collaborative

Learning Workshop 1

EVALUATION FORM

Date

To help us improve future events we would be grateful if you would complete this evaluation form and place in the Evaluation Box at the end of the day.

Training Location: _____

Participant Initials: _____ **Age:** _____ **Gender:** _____

Name of organisation: _____

Job title: _____

Years in present position: <1 1-3 3-5 5+ (please circle your response)

How did you hear about the collaborative: _____

Please rate the presentations / session you attended:

1.0 Introduction to the Collaborative aim and change principles	Strongly Disagree	Strongly Agree
	↓	↓
My knowledge of the topic was increased by attending this presentation?	0	10
The presentation was well organised?	0	10
The presenter spoke clearly?	0	10
I would recommend this presentation to others?	0	10
	1	9
	2	8
	3	7
	4	6
	5	5
	6	4
	7	3
	8	2
	9	1
	10	0
2.0 Model for Improvement	Strongly Disagree	Strongly Agree
	↓	↓
My knowledge of the topic was increased by attending this presentation?	0	10
The presentation was well organised?	0	10
The presenter spoke clearly?	0	10
I would recommend this presentation to others?	0	10
	1	9
	2	8
	3	7
	4	6
	5	5
	6	4
	7	3
	8	2
	9	1
	10	0

Please rate the presentations / session you attended:

3.0 Breakout Sessions	Strongly Disagree	Strongly Agree									
A1 & B1 – Creating improvement teams											
My knowledge of the topic was increased by attending this presentation?	0	1	2	3	4	5	6	7	8	9	10
The session was well organised?	0	1	2	3	4	5	6	7	8	9	10
I would recommend this presentation to others?	0	1	2	3	4	5	6	7	8	9	10
A2 & B2 – System thinking using recalls and protocols											
My knowledge of the topic was increased by attending this presentation?	0	1	2	3	4	5	6	7	8	9	10
The session was well organised?	0	1	2	3	4	5	6	7	8	9	10
I would recommend this presentation to others?	0	1	2	3	4	5	6	7	8	9	10
4.0 Team Time	Strongly Disagree	Strongly Agree									
My knowledge of the topic was increased by attending this presentation?	0	1	2	3	4	5	6	7	8	9	10
The session was well organised?	0	1	2	3	4	5	6	7	8	9	10
5.0 Evidence behind the CHD measures	Strongly Disagree	Strongly Agree									
My knowledge of the topic was increased by attending this presentation?	0	1	2	3	4	5	6	7	8	9	10
The presentation was well organised?	0	1	2	3	4	5	6	7	8	9	10
The presenter spoke clearly?	0	1	2	3	4	5	6	7	8	9	10
I would recommend this presentation to others?	0	1	2	3	4	5	6	7	8	9	10
6.0 Understanding your population	Strongly Disagree	Strongly Agree									
My knowledge of the topic was increased by attending this presentation?	0	1	2	3	4	5	6	7	8	9	10
The presentation was well organised?	0	1	2	3	4	5	6	7	8	9	10
The presenter spoke clearly?	0	1	2	3	4	5	6	7	8	9	10
I would recommend this presentation to others?	0	1	2	3	4	5	6	7	8	9	10

Please let us know how you found the overall event:

7.0 Overall Evaluation of the workshop:														
7.1	Today, the topic/topics impressed me or interested me most was ... (please explain why)													
7.2	Today what facilitated my learning was													
7.3	The topics or issues that were not clear to me today were ...													
7.4	I would like the following topics to be discussed in this or future workshops ...													
7.5	My recommendations for next workshops are ...													
8.0 Please let us know how you found today's event		Poor									Outstanding			
		↓												↓
8.1	Overall importance of topic	0	1	2	3	4	5	6	7	8	9	10		
8.2	Relevance of topic to my work	0	1	2	3	4	5	6	7	8	9	10		
8.3	Quality of presentation	0	1	2	3	4	5	6	7	8	9	10		
8.4	Organization of content	0	1	2	3	4	5	6	7	8	9	10		
8.5	Training objectives met	0	1	2	3	4	5	6	7	8	9	10		
8.6	All things considered, how would you rate this workshop?	0	1	2	3	4	5	6	7	8	9	10		
9.0 Please let us know how you found the organisation of today's event		Poor									Outstanding			
		↓												↓
9.1	Event Organisation	0	1	2	3	4	5	6	7	8	9	10		
9.2	Accommodation (if applicable)	0	1	2	3	4	5	6	7	8	9	10		
9.3	Venue	0	1	2	3	4	5	6	7	8	9	10		
9.4	Catering	0	1	2	3	4	5	6	7	8	9	10		

10.0 Please rate how well the activity's stated learning objectives were met:		Not at all met	Partially met	Completely met
10.1	Objective 1: I am able to list and discuss the Collaborative aim and change principles	1	2	3
10.2	Objective 2: I can describe the Model for Improvement including PDSA cycles	1	2	3
10.3	Objective 3: I am able to create a list of change ideas to test in my practices	1	2	3
10.4	Objective 4: I can discuss the Collaborative measures used	1	2	3
		Not at all met	Partially met	Completely met
10.5	Rate the degree to which your learning needs were met	1	2	3
10.6	Rate to what degree is this workshop relevant to your practice	1	2	3
12.0 Any other comments? (Including suggestions on how the learning workshop could be improved?)				

Thank you for your time in completing this evaluation

QUEL Heart Disease Collaborative

Learning workshop 2 3 4 5 EVALUATION FORM

Date of the workshop:

To help us improve future events we would be grateful if you would complete this evaluation form and place in the Evaluation Box at the end of the day.

Training Location: Webinar

Participant Initials: _____ **Age:** _____ **Gender:** _____

Name of organisation: _____

Job title: _____

Years in present position: <1 1-3 3-5 5+ (please circle your response)

How many people were in attendance with you today, excluding yourself _____

Please rate the presentations / session you attended:

1.0 Overall importance of topic. (1- Very Poor to 5 Outstanding)		Very poor outstanding				
		↓	↓	↓	↓	↓
1.1	Overall importance of topic	1	2	3	4	5
1.2	Relevance of topic to my work	1	2	3	4	5
1.3	Quality of presentation	1	2	3	4	5
1.4	Organisation of content.	1	2	3	4	5
1.5	Overall, how would you rate this workshop	1	2	3	4	5
2.0 Please rate how well the activity's stated learning objectives were met		Not at all met	Partially met	Completely met		
Objective 1: I am able to Identify ideas to test within the practice.		1	2	3		
Objective 2: I have an increased understanding of how to undertake care planning for patients with Chronic Heart Disease		1	2	3		
Objective 3: I can describe next steps/requirements for the next activity period.		1	2	3		
3.0 Outline any Quality Improvement initiative(s) your practice has taken since the first face to face Learning Workshop in November						

4.0 Have you submitted your PDSA Cycle?		Yes	No
4.1	If you answered 'Yes' to Question 4.0, how many have you submitted		
4.2	If you answered 'No' to Question 4.0, when do you plan on submitting a MFI/PDSA cycle?		
5.0 Outline any success you have achieved towards meeting your MFI/PDSA cycle targeted to improve care of patients with Chronic Heart Disease?			
6.0 Outline any challenges you are facing towards achieving your MFI/PDSA cycle targeted to improve care of patients with Chronic Heart Disease?			
7.0 Any other comments (including what topics would you like discussed at future workshops and my recommendations for next workshop are):			

Thank you for your time in completing this evaluation

QUEL Heart Disease Collaborative Learning workshop 6 EVALUATION FORM

Date: _____

To help us improve future events we would be grateful if you would complete this evaluation form and place in the Evaluation Box at the end of the day.

Training Location: Webinar

Participant Initials: _____ **Age:** _____ **Gender:** _____

Name of organisation: _____

Job title: _____

Years in present position: <1 1-3 3-5 5+ (please circle your response)

Please let us know how you found the overall event:

1.0 Welcome and Update on the QUEL Collaborative Research		Strongly disagree									Strongly agree	
		↓										↓
1.1	My knowledge of the topic was increased by attending this presentation.	0	1	2	3	4	5	6	7	8	9	10
1.2	The presentation was well organised.	0	1	2	3	4	5	6	7	8	9	10
1.3	The presenters spoke clearly.	0	1	2	3	4	5	6	7	8	9	10
1.4	I would recommend this presentation to others.	0	1	2	3	4	5	6	7	8	9	10
2.0 Process Mapping for Heart Disease		Strongly disagree									Strongly agree	
		↓										↓
2.1	My knowledge of the topic was increased by attending this presentation	0	1	2	3	4	5	6	7	8	9	10
2.2	The presentation was well organised	0	1	2	3	4	5	6	7	8	9	10
2.3	The presenters spoke clearly	0	1	2	3	4	5	6	7	8	9	10
2.4	I would recommend this presentation to others	0	1	2	3	4	5	6	7	8	9	10

3.0 Heart Disease Improvement Stories - Part 1		Strongly disagree											Strongly agree	
		↓						↓						↓
3.1	My knowledge of the topic was increased by attending this presentation	0	1	2	3	4	5	6	7	8	9	10		
3.2	The presentation was well organised	0	1	2	3	4	5	6	7	8	9	10		
3.3	I would recommend this presentation to others	0	1	2	3	4	5	6	7	8	9	10		
4.0 Heart Disease Improvement Stories - Part 2		Strongly disagree											Strongly agree	
		↓						↓						↓
4.1	My knowledge of the topic was increased by attending this presentation	0	1	2	3	4	5	6	7	8	9	10		
4.2	The presentation was well organised	0	1	2	3	4	5	6	7	8	9	10		
4.3	I would recommend this presentation to others	0	1	2	3	4	5	6	7	8	9	10		
5.0 Sustaining Change and Sharing Plans for sustaining change		Strongly disagree											Strongly agree	
		↓						↓						↓
5.1	My knowledge of the topic was increased by attending this presentation	0	1	2	3	4	5	6	7	8	9	10		
5.2	The presentation was well organised	0	1	2	3	4	5	6	7	8	9	10		
5.3	I would recommend this presentation to others	0	1	2	3	4	5	6	7	8	9	10		
6.0 Overall Evaluation of the workshop														
6.1	Today, the topic/topics impressed me or interested me most was/were ... (please explain why)													
6.2	Today what facilitated my learning was													
6.3	The topics or issues that were not clear to me today were													
6.4	My recommendations for future workshops are													

7.0 Please let us know how you found today's event		Strongly disagree Strongly agree										
		0	1	2	3	4	5	6	7	8	9	10
7.1	Overall importance of the topic	0	1	2	3	4	5	6	7	8	9	10
7.2	Relevance of the topic to my work	0	1	2	3	4	5	6	7	8	9	10
7.3	Quality of presentations	0	1	2	3	4	5	6	7	8	9	10
7.4	Organization of content	0	1	2	3	4	5	6	7	8	9	10
7.5	Training objectives met	0	1	2	3	4	5	6	7	8	9	10
7.6	All things considered, how would you rate this learning workshop?	0	1	2	3	4	5	6	7	8	9	10
8.0 Please rate how well the activity's stated learning objectives were met:		Not at all met	Partially met	Completely met								
8.1	Objective 1: I can discuss tools to support service redesign, including patient journey mapping	1	2	3								
8.2	Objective 2: I am confident I can create a list of change ideas to test in my health service	1	2	3								
3.3	Objective 3: I can describe strategies for sustaining change	1	2	3								
		Not at all met	Partially met	Completely met								
9.0	Rate the degree to which your learning needs were met	1	2	3								
10.0	Rate to what degree is this workshop relevant to your practice	1	2	3								
11.0 Any other comments? (Including suggestions on how the learning workshop could be improved?)												

Thank you for your time in completing this evaluation

QUEL End-of-Program evaluation survey

Participant Initials: _____ Age: _____ Gender: _____

Name of Practice: _____

Job title: _____ Date: _____

Years in present position: <1 1-3 3-5 5+ (please circle your response)

INSTRUCTIONS

Please circle your response to the items. Rate aspects of the workshop on a 1 to 6 scale:

Choose N/A if the item is not appropriate or not applicable to this workshop. Your feedback is sincerely appreciated.

Thank you

OVERALL WORKSHOP CONTENT (Circle your response to each item.)	Strongly Agree	Agree	Neutral	Strongly disagree	Disagree	N/A
1. I was well informed about the objectives of the workshops	1	2	3	4	5	6
2. Workshops lived up to my expectations	1	2	3	4	5	6
3. The content was relevant to my job	1	2	3	4	5	6
4. I would recommend the program to others	1	2	3	4	5	6
OVERALL WORKSHOP DESIGN	Strongly Agree	Agree	Neutral	Strongly disagree	Disagree	N/A
5. The workshop objectives were clear to me	1	2	3	4	5	6
6. The workshop activities stimulated my learning	1	2	3	4	5	6
7. The activities in the workshops gave me sufficient practice and feedback	1	2	3	4	5	6
8. The difficulty level of the workshops was appropriate	1	2	3	4	5	6
9. The pace of the workshops was appropriate	1	2	3	4	5	6
10. The duration of the workshops was appropriate	1	2	3	4	5	6
11. The quantity of the information presented at the workshops was appropriate	1	2	3	4	5	6
OVERALL WORKSHOP FACILITATOR:	Strongly Agree	Agree	Neutral	Strongly disagree	Disagree	N/A
12. The instructors were well prepared	1	2	3	4	5	6
13. The instructors were helpful	1	2	3	4	5	6

OVERALL WORKSHOP RESULTS	Strongly Agree	Agree	Neutral	Strongly disagree	Disagree	N/A
14. I will be able to use what I learned in this workshop	1	2	3	4	5	6
15. The workshops were a good way for me to learn this content	1	2	3	4	5	6
WORKSHOP OUTCOME	Not at all	A little	Some	Quite a bit	A lot	
16. Overall, how satisfied are you with your progress as a result of the workshops over the past year	1	2	3	4	5	
17. How much has the workshops contributed to improve quality of your practice over the past year	1	2	3	4	5	
18. To what extent you are able to utilise the learning from the workshops over the past year	1	2	3	4	5	
19. How confident are you in implementing changes in your practice based on the learning from the workshops	1	2	3	4	5	
20. What new initiatives (up to three) have you taken in your practice as a result of the workshops over the past year?						
1. _____						
2. _____						
3. _____						
21. What changes have you made in your practice as a result of the workshops over the past year?						
1. _____						
2. _____						
3. _____						
22. What did you find most useful from all the quality improvement workshops over the past year?						

23. What did you find least useful from all the quality improvement workshops over the past year?						

24. What other improvements would you recommend in these workshops:						

25. How easy or difficult is it for you to use the practice management system to do the following for your patients?	Very easy	Somewhat easy	Somewhat difficult	Very difficult	Not applicable	
a. Review basic pathology results	1	2	3	4	5	
b. Update medication list and drug allergies for patients	1	2	3	4	5	
c. Review information from hospital discharge summary	1	2	3	4	5	
<i>circle one</i>	Never	Rarely	Sometimes	Usually	Always	Don't know
26. How often does your Primary Care Team ask for patient input when making a plan for their care	1	2	3	4	5	6
27. How often does your Primary Care Team use electronic data to identify patients with CVD	1	2	3	4	5	6
28. How often does your Primary Care Team use electronic data to monitor and track patient health indicators and outcomes	1	2	3	4	5	6
29. How often does your Primary Care Team use electronic systems to support the documentation of patient needs	1	2	3	4	5	6
30. How often does your Primary Care Team use electronic systems to develop care plans	1	2	3	4	5	6
31. How often does your Primary Care Team use electronic systems to determine Clinical outcomes	1	2	3	4	5	6
	Poor	Fair	Good	Very Good	Excellent	
32. In general, how would you rate the coordination of care provided by your primary care practice/ service?	1	2	3	4	5	
33. In general, how would you rate the quality of care provided to patients by your primary care practice/ service?	1	2	3	4	5	

Please indicate your level of agreement with the following statements about your job:

	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Don't know
34. We have clearly defined quality improvement goals	1	2	3	4	5	6
35. Our practice leaders visibly demonstrate a commitment to quality improvement	1	2	3	4	5	6
36. Our practice leaders strongly support practice change efforts	1	2	3	4	5	6
37. In what ways has your role in the practice changed as a result of the quality improvement initiative?	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Don't know
a. The depth of my job has increased (e.g. through extending my skills)	1	2	3	4	5	6
b. The breadth of my job has expanded (e.g. wider range of tasks, and/ or working with more organisations)	1	2	3	4	5	6
c. I now delegate more responsibility to others	1	2	3	4	5	6
d. I now have more responsibilities delegated to me	1	2	3	4	5	6
e. Can you briefly describe how/if your role has changed as a result of the CVD QI program?						

	Got better	Stayed the same	Got worse	Not sure		
38. Since the Quality Improvement program commenced, has the quality of care in received by patients at your practice/ service	1	2	3	4		
39. Does your practice have software capacity to implement the QI program? If not, explain:						<input type="radio"/> Yes <input type="radio"/> No

40. Did the workshops enhance capacity for your practice to be ready for the introduction of a QI-PiP?						<input type="radio"/> Yes <input type="radio"/> No
41. Would you be interested in participating in a similar workshop in future? Comment:						<input type="radio"/> Yes <input type="radio"/> No

<p>42. Have you claimed QI-PIP as a part of this study? <input type="radio"/> Yes <input type="radio"/> No If yes, a. How many times have you claimed QI-PIP since December 2019? _____</p>					
	Strongly Agree	Agree	Neutral	Strongly disagree	Disagree
b. Did the availability of QI-PIP influence your practice's engagement/participation in quality improvement?	1	2	3	4	5
c. Any comments on the experience of using QI-PIP?					
<p>43. Have you used the QUEL SharePoint site during the past 14 months? <input type="radio"/> Yes <input type="radio"/> No a. If yes, how often did you use the SharePoint and what did you use it for? _____ _____</p>					
	Strongly Agree	Agree	Neutral	Strongly disagree	Disagree
b. Did the availability of the SharePoint influence your practice's engagement/participation in quality improvement?	1	2	3	4	5
c. Any comments on the experience of using the SharePoint?					
<p>44. Did COVID-19 impact on your participation in the CVD QI program? <input type="radio"/> Yes <input type="radio"/> No If yes, can you give some example/s of how? _____ _____ _____</p>					
<p>45. Do you have any other comments or feedback: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____</p>					

Thank you for completing the QUEL Post-Program Evaluation Survey

Supplementary file 4: Semi-structured interview schedule

Practice Code	Participant type	Interview	Schedule
B	Practice nurse	Yes	28/11/2021
J	Practice manager	Yes	23/11/2021
K	General practitioner	Yes	7/12/2021
K	Practice manager	Yes	7/12/2021
V	Practice nurse	Yes	30/09/2021
W	Operations and practice manager	Yes	14/12/2021
X	Practice manager and Lead care coordination services	Yes	24/09/2021
Y	General practitioner	Yes	15/10/2021
PHN	Practice support officer	Yes	20/09/2021