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Using a Customer Relationship Management System to Manage a Quality Improvement Intervention

Hang Pham-Singer, PharmD[1], Marie Onakomaiya, PhD, MPH[1], Allison Cuthel, MPH[2], Samantha De Leon, PhD[1], Sarah Shih, MPH[1], Su Chow, MPH[1], and Donna Shelley, MD, MPH[2]

Abstract

HealthyHearts New York City (HHNYC), one of 7 cooperatives funded through the Agency for Healthcare Research and Quality's EvidenceNOW initiative, evaluated the impact of practice facilitation on implementation of the Million Hearts guidelines for cardiovascular disease prevention and treatment. Tracking the intervention required a system to facilitate process data collection that was also user-friendly and flexible. Coupled with protocols and training, a strategically planned and customizable customer relationship management system (CRMS) was implemented to support the quality improvement intervention with 257 small independent practices. Features of the CRMS and implementation protocols were customized to optimize program management, practice facilitation tracking and supervision, and data collection for performance feedback to practices and research. The CRMS was a valuable tool for tracking and managing the intervention systematically. Successful implementation of the HHNYC protocol also required an articulated implementation plan and adoption process.

Keywords

quality improvement, Million Hearts, customer relationship management systems, practice facilitation, program implementation

Small independent primary care practices (SIPs) often lack the resources needed to adopt quality improvement (QI) system changes for practice improvement. Practice facilitation is an evidence-based QI strategy that supports primary care practices with improving health care quality.[1,2] Practice facilitators (PFs) are trained in a range of organizational development and QI approaches to help practices achieve transformative QI goals.[3]

Variation in implementation or delivery of QI strategies such as practice facilitation can affect the impact of a program. Moreover, monitoring and managing an intervention to ensure fidelity can be challenging, particularly when the intervention: (1) has a complex operational protocol, (2) is delivered over an extended period, and (3) is large in scale. Exacerbating these challenges is the fact that there is currently no standard tool for monitoring and documenting facilitation work. Additionally, systems that have been used to track practice facilitation for large-scale implementation have not been described in detail.

HealthyHearts NYC (HHNYC), funded through the Agency for Healthcare Research and Quality's national EvidenceNOW initiative, was a study of the effectiveness of external practice facilitation on adoption of the Million Hearts guidelines for preventing and managing cardiovascular disease (CVD) in 257 SIPs.

To track and manage the HHNYC intervention, the Primary Care Information Project (PCIP) developed a protocol incorporating PF use of a customer relationship management system (CRMS) for collecting, tracking, storing, and sharing data about practices and practice facilitation activities in real time. The CRMS is used to compile information about customers' interactions with the company. The system gathers, manages, and analyzes customer data so the company can "create a more personal interaction with the customer." Although CRMSs have been used historically to "sell

[1]New York City Department of Health and Mental Hygiene, Queens, NY
[2]New York University School of Medicine, New York, NY

Corresponding Author:
Hang Pham-Singer, PharmD, New York City Department of Health and Mental Hygiene, 42-09 28th Street, Long Island City, NY 11101.
Email: hphamsinger@health.nyc.gov

more goods or services and to do it more efficiently,"[4] PCIP used a CRMS to support and track the HHNYC practice facilitation QI intervention. The CRMS proved to be critical to implementing and managing the HHNYC intervention, as well as providing data to evaluate the impact of the study.

Few studies offer insight into how organizations can tailor a CRMS to support the delivery and monitoring of practice facilitation. These data are needed to further elucidate the facilitation process and recommend improvements. This article describes the adaptation and implementation of a CRMS, including system features and protocol strategies, to track, monitor, and manage the large-scale implementation of the complex HHNYC intervention.

Methods

Study Setting

PCIP of the New York City (NYC) Department of Health and Mental Hygiene (DOHMH) has served as NYC's regional extension center and has assisted providers in adopting and implementing electronic health record (EHR) systems,[5,6] using practice facilitation. HHNYC was a collaboration between PCIP and the Department of Population Health at New York University School of Medicine (NYU). Study sites were SIPs in PCIP's network.

Study Design

HHNYC was a 3-year project that required rigorous practice facilitation and implementation processes to assist practices in adopting CVD-related evidence-based guidelines. CVD care and outcomes included aspirin when indicated, blood pressure control, cholesterol management, and smoking screening and cessation, described as the "ABCS outcomes." PFs supported a range of practice changes consistent with the Chronic Care Model (CCM) and associated with improvements in chronic disease management.[7,8]

HHNYC had a stepped-wedge cluster randomized control study design. This enabled naturally occurring control and intervention groups, because SIPs were randomly assigned to the intervention group in 4 waves (ie, start dates) at 3-month intervals, with all sites eventually receiving the intervention. Over 3 years (December 2015 to September 2018), PCIP provided 12 months of practice facilitation to 257 SIPs in NYC. The protocol included 13 in-person visits (2 in the first month, and then once monthly). Additional details on the HHNYC study design, protocol, and intervention are in the published protocol paper.[9] HHNYC was approved by the institutional review boards of both NYU Langone Health and DOHMH.

Practice Facilitation Approach

Each PCIP PF (N = 16) was assigned to a panel of practices (range: 16-21) to implement the yearlong HHNYC intervention, primarily through on-site visits. The intervention focused on promoting system changes (eg, clinical alerts, registry reports, templates) and workflow redesign that were consistent with current models for practice transformation.[10-12] For instance, to address smoking screening and counseling, PFs trained practices to use an EHR template that would help with assessing smoking status and providing counseling to people who smoke. This led to improvements in both measures.[13] The implementation process incorporated an adaptive plan-do-study-act (PDSA) approach.[14]

CRMS Selection and Customization

The study team conducted a needs assessment to determine the features and customization required to monitor and track the complex HHNYC intervention. The needs assessment incorporated PCIP's and NYU's past experiences implementing QI interventions, and interviews with PCIP's PFs and PF managers to capture feedback from staff who would be using the CRMS. The team also identified measures of intervention fidelity that the system would need to capture. These included interaction frequency, mode (ie, means of delivery), duration, and type (ie, predetermined system changes or other practice changes). The collective feedback identified that the system would need to serve multiple purposes. The CRMS was needed primarily as a tool to manage the HHNYC intervention, including facilitating actionable, real-time feedback to the study team, PF managers, and PFs. However, it would also provide a platform to concurrently capture data for analyses of intervention fidelity and effectiveness.

Based on the needs assessment, Salesforce API Version 41.0 (Salesforce Inc., San Francisco, California) was the CRMS chosen to manage the HHNYC study. Salesforce accounts were purchased for all users. Each license cost approximately $900. The accounts were password protected, and access could be restricted by role. The CRMS was also customized using the requirements identified by the needs assessment.

Results

Implementation of CRMS for Practice Facilitation

Seven key features and functions within the CRMS, mostly categorized as pages, were adapted to address the project needs (Table 1). The pages were interconnected to enable seamless navigation between pages and features. This section describes how they were used for HHNYC.

Table 1. CRMS Features, Functions, and Utilization.

CRMS feature	Purpose	HHNYC implementation	Innovations	Utilization
Accounts Page	Profile page for each practice	Documented key features of each practice (eg, name, address, and phone numbers, as well as office hours, and main/primary contact)		All 257 practices had an Account page
Program Page	Centralized page for HHNYC program-specific intervention activities	Documented practices' enrollment status, assigned facilitator, and wave of engagement in HHNYC	Linked to events, assessments, and tasks to track intervention activities conducted at each practice	257 practices were linked to the "Healthy Hearts" Program page
Events	Captured duration, mode, and frequency of intervention activities	Documented meeting mode, frequency, duration, and intervention-related (but not logistics-related) email- and phone-based communication with the practice	Linked to assessments feature because PFs completed a standard QI progress assessment after each site visit	The 16 PFs documented a total of 4399 events
Assessments	Assessment form to capture PFs' observations and reflections on HHNYC intervention progress at each practice	Quantitatively documented the degree to which the practice adopted elements of the CCM using a 5-point Likert-type scale. Both structured and free-text fields mapped to CCM intervention activities. PFs also assessed capacity for QI and barriers, and wrote narrative reports about on-site visits and next steps.	PF managers reviewed and provided feedback to PFs on the facilitation process based on information found in the completed assessment form. To help a PF overcome documented challenges, managers indicated the need to accompany or assign another expert to accompany the PF on a future on-site visit designated as a Shadow Site Visit.	The 16 PFs completed a total of 3987 assessments. Review of the assessments resulted in 205 Shadow Site Visits
Tasks	Tracked deployment and progress through HHNYC intervention curriculum	Documented completion (including date) of required tasks assigned to PFs by administrative staff to align with intervention curriculum and supporting strategies		The 16 PFs completed a total of 12133 tasks
Reports Page	Page to construct semi-customized reports from all pre-designated data fields available in CRMS	Reports helped to review aggregated data about the intervention and PF activities, and could be combined with ABCS quality measures data to assess practice performance	Dashboards consolidated reports into a comprehensive overview of the program. Report generation did not require programming knowledge or query expertise. CRMS-generated reports were exported and combined with ABCS outcomes from the practices' EHRs to create weekly performance reports.	109 reports and dashboards were generated on the Reports page
Library Page	Centralized resource page for information and topical documents related to HHNYC	Used to publish, view, and/or export relevant information and resources during on-site visits, such as intervention curriculum, and provider or patient educational materials	Real-time, cloud-based access to important resources that also could be downloaded and shared with practices (and patients) as needed	55 resources were available on the Library page

Abbreviations: ABCS, aspirin when indicated, blood pressure control, cholesterol management, smoking screening and cessation; CCM, Chronic Care Model; CRMS, customer relationship management system; HHNYC, HealthyHearts New York City; PF, practice facilitator; QI, quality improvement.

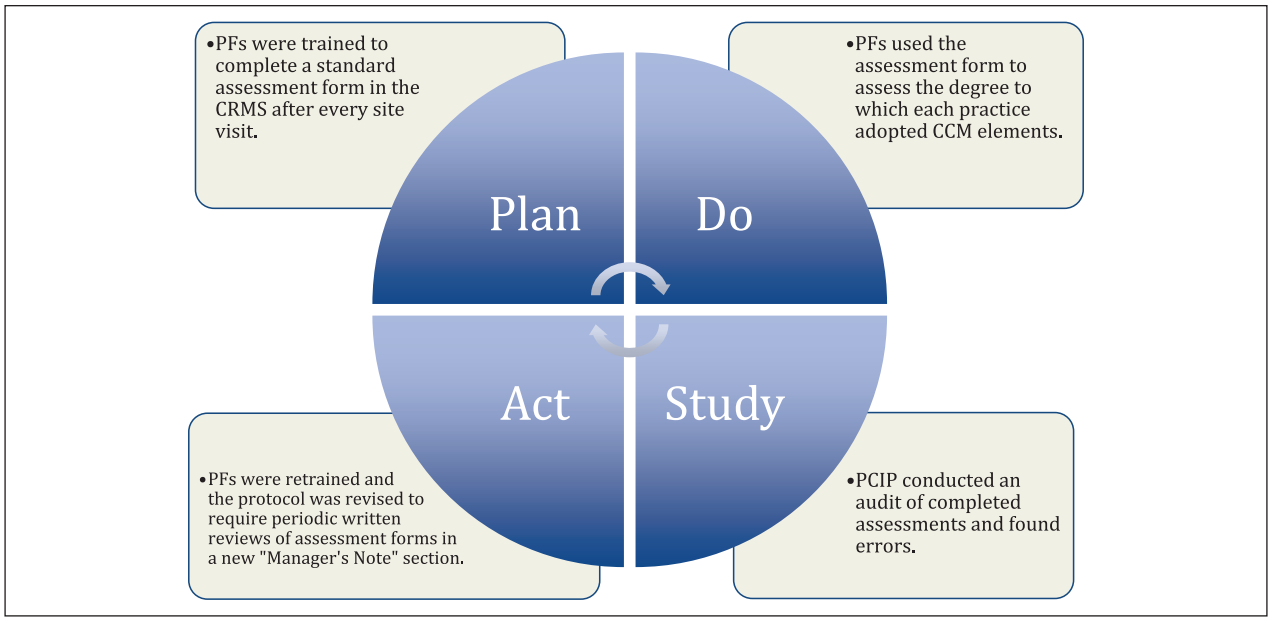

Figure 1. Process management using the plan-do-study-act (PDSA) workflow, showing an example of how the PDSA cycle supported implementation and refinement of the study protocol.
CCM, Chronic Care Model; CRMS, customer relationship management system; PCIP, Primary Care Information Project; PF, practice facilitator.

Tracking Enrolled Practices

Salesforce categorizes any organization, company, or customer that will be tracked as an account. Each of the 257 HHNYC practices was considered an account, and could be viewed on the *Accounts* page (Table 1). The Accounts page contained characteristics and contacts for each practice and listed the different programs in which a practice was enrolled. Because a practice in NYC could participate in multiple technical assistance and incentive programs with PCIP, a *Program* page was created to centralize all 257 HHNYC practices' account pages. The Program page also allowed documentation of the status (active or not active) of each practice in the study. Moreover, because of the stepped-wedge study design, the Program page also identified each practice's wave assignment.

Tracking Intervention Activities

PFs were trained to document every in-person site visit and intervention-related telephone or email communication with practices using the *Events* feature. There, PFs documented data that tracked intervention fidelity, such as frequency, mode, and duration of interactions with practices, using date and time fields. All PFs and managers also received a written curriculum and didactic training that detailed intervention activities and how to track them in the CRMS. Recommended HHNYC intervention activities outlined in the curriculum were uploaded into the CRMS as tasks that were then assigned to PFs using the *Task* feature. Activities were labeled as distinct tasks. The Task feature created a "to-do" list for PFs to document completion of intervention activities with each practice. This provided a practical way to organize and track all the required intervention activities for PFs' assigned practices at various stages of the HHNYC curriculum. Over the 3-year period, the 16 PFs completed 12 133 tasks and documented 4399 events (Table 1).

Assessing and Supervising Intervention Activities

PFs were required to complete an assessment of intervention progress following each on-site visit. The *Assessments* form was embedded in the CRMS and constructed using both structured and unstructured data fields. Structured fields on the assessment mapped to elements of the CCM (eg, self-management support, clinical information systems) that stimulate high-quality chronic care management, and collected information on which element of the CCM had been reviewed. The assessment also captured PFs' scaled evaluation of the degree to which the practice had adopted CCM elements. An open text field enabled the PF to document site visit details, such as practice staff turnover resulting in the need to train new staff, and other factors that hindered QI. PFs had to complete the assessment within 48 hours of a site visit.

The PDSA approach (Figure 1) was used to assess intervention fidelity and identify protocol enhancements. The study team audited assessment forms, and found discrepancies, incompleteness, and errors in documentation.

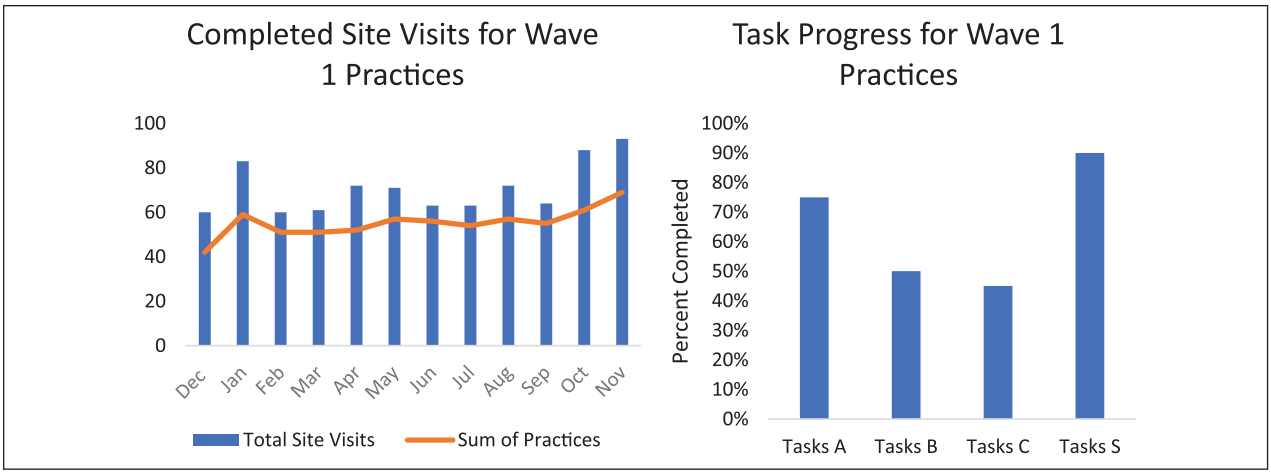

Figure 2. Sample customer relationship management system dashboard showing the number of completed site visits (left) and percent of completed tasks (right) for "wave 1 practices" (ie, the first cohort of practices).

To address these issues, PF managers began reviewing assessments biweekly. A "Manager's Notes" section was added to the assessment form to document feedback and recommendations to coach PFs on the facilitation process. For instance, a manager could note if a critical QI approach had been overlooked or inadequately addressed. A manager also could indicate the need for supervision on a future site visit for PFs who appeared to require assistance. Such visits were designated as a "Shadow Site Visit" in the CRMS. Over the 3-year period, the 16 PFs completed 3987 assessments and managers documented 205 Shadow Site Visits (Table 1).

Generating Reports for Program Reporting and Data Analyses

Semi-customized reports could be constructed in the CRMS using a drag-and-drop tool. Reports highlighted the number of in-person visits, progress of task completion, and aggregate information on key areas of the assessment forms. The study team used the reports to (1) identify when practices did not receive site visits, (2) monitor the pace at which intervention activities were rolled out, and (3) evaluate whether and how quickly tasks were completed. The information was consolidated into a dashboard of customized reports on the *Reports* page, providing a snapshot of the program (Figure 2). PFs used this to adapt their work plans in real time. There were 109 reports on the Reports page by the end of the 3-year study period (Table 1).

Additionally, all CRMS-generated reports could be exported to other software to create more complex reports. Using Structured Query Language and a relational database management system, a performance report was created that combined CRMS data with the practices' EHR-generated, quality measures data on the ABCS outcomes (eg, Table 2). This comprehensive performance report matched intervention activities with practice performance and was automatically generated and emailed to PF managers, PFs, and the study team, weekly. PFs used this report to adapt their work plans based on how each practice was performing on the ABCS outcomes.

Cloud-Based Access to Information Resources

PFs spent significant time on site at practices. During the in-person site visits, a PF may have needed to access or share information (eg, intervention curricula, provider education resources, patient education materials). The *Library* page provided a mechanism to centralize document storage, which could then be accessed easily by PFs during visits. Also, the license-sharing functionality of the CRMS supported efficient real-time information sharing, allowing PF managers, PFs, and the study team to access information directly (with their personalized login). There were 55 resources on the designated Library page by the end of the HHNYC study (Table 1).

Active Learning and Refresher Training

PF education involved active learning processes incorporating continuous progress monitoring, ad hoc trainings, and content adjustments based on emerging needs. CRMS trainings applied adult learning concepts by supplementing lectures and written documents (ie, passive knowledge transfer) with active learning. The study team found that PFs would learn through trial and error, improving efficiency with consistent exposure to and use of CRMS. Continuous data review also helped ensure that emergent issues and additional training were addressed quickly.

PCIP also had dedicated staff to provide individualized training to PFs who needed assistance with the CRMS, or whose site assessments or data were inconsistent or

Table 2. Sample Report[a].

Practice facilitator name	Practice name	Cohort	Date of last site visit	Site visits to date	Practice ABCS outcomes					
							Cholesterol management			
					Aspirin use (num/den)	Blood pressure control (num/den)	For patients with CVD (num/den)	For patients with high LDL (num/den)	For patients with diabetes (num/den)	Smoking cessation counseling (num/den)
Practice facilitator 1	Practice A	Wave 1	12/19/2016	12	88% (21/24)	68% (132/195)	92% (24/26)	85% (11/13)	60% (3/5)	68% (26/38)
	Practice B	Wave 2	3/9/2017	11	76% (195/258)	80% (202/254)	93% (63/68)	75% (3/4)	100% (2/2)	60% (90/150)
	Practice C	Wave 3	6/1/2017	11	76% (38/55)	73% (220/302)	83% (25/30)	95% (19/20)	60% (93/155)	67% (20/30)
	Practice D	Wave 4	8/23/2017	10	69% (37/54)	73% (99/136)	87% (20/23)	63% (5/8)	71% (60/85)	62% (31/50)

Abbreviations: ABCS, aspirin when indicated, blood pressure control, cholesterol management, smoking screening and cessation; CVD, cardiovascular disease; LDL, low-density lipoprotein.
[a]Report links practice facilitation activities captured in the customer relationship management system with practice-specific ABCS outcomes from the electronic health record.

incomplete. Instead of reviewing lectures or written documents, the trainer first observed the PF's current processes and then suggested appropriate adjustments. Managers also provided PFs with individualized support to ensure standardized documentation of all intervention activities and assessments.

Discussion

Practice facilitation is increasingly viewed as an important strategy to support QI through practice transformation.[1,2] The approach involves complex changes and organizational oversight,[3] and a core component is tailoring to the local context. Using a CRMS for documentation and reflection throughout the practice change process provides near real-time information about what is working, why it worked, and in what settings. This information can then be shared with other PFs and across a range of clinical settings to inform QI approaches and plans for scaling up effective strategies.[15]

A CRMS can track what and why adaptations were made and how they impacted quality of care, providing a greater understanding of the practice facilitation process. Also, a CRMS is designed to allow for customization by the end user without additional costs. Therefore, HHNYC leveraged and enhanced PCIP's CRMS by adapting several features of the system to address research and QI needs. This type of systematic documentation was critical for optimizing the intervention, supporting PF delivery of comparable interventions to all practices, as well as collecting data to assess intervention fidelity and factors associated with effectiveness.

The process of customizing and integrating the CRMS for the HHNYC study was iterative, applying the principles of a PDSA cycle.[11] To create action-oriented learning and continuous process improvement, the study team planned adaptations of the CRMS and operations involving the CRMS, piloted them, and then made changes to the system based on feedback from PFs and PF managers. the CRMS facilitated the PDSA cycle and accelerated the pace of intervention by enabling real-time data collection and intervention monitoring. This allowed identification of necessary modifications and rapid resolution of errors throughout study implementation.

As part of the PDSA cycle of audit and improvement, changes were made to the intervention protocol, or PFs received additional training or supervision based on PF or PF manager feedback, as well as review of CRMS data, when necessary. It was critical to establish procedures for routine monitoring, review, and sharing of information collected in the CRMS to ensure intervention fidelity and quality. The weekly report of intervention activities created a transparent process whereby PFs understood from the beginning that activities would be monitored by both the PCIP and NYU study teams who were evaluating the study process and outcomes. PF managers and the study team met weekly to review reports and provide feedback to PFs. These shared reports incentivized PFs to self-regulate their activities and PFs were not caught unaware by feedback.

One of the greatest challenges to implementing the CRMS in this study was ensuring data collection and accuracy. At the start the intervention, the facilitators were not accustomed to the type and degree of documentation required. In addition to establishing a clear protocol for training the PFs in operational and intervention documentation, the study team learned that it was important to have a protocol to routinely monitor the data for accuracy. The team also learned that it was important to provide swift and specific feedback to PFs so that corrections could be made. Additionally, as the intervention progressed, PFs expressed documentation fatigue. The team had to adjust by reevaluating which data were critical and which were less so. For example, while it was established that site visits must be documented, the team determined that emails and phone calls between the PF and the practice could be documented at the discretion of the PF, based on perceived importance.

Adapting and integrating the CRMS to support the intervention required changes to both the system and PCIP processes. That is, technology alone was inadequate;

time, effort, willingness to adopt process changes, and additional resources (eg, protocols, supervision, training, retraining) were critical for successful implementation.

Limitations

Although the CRMS provided customizable reports, report generation was restricted by preset parameters, which were not always modifiable. Therefore, to build more complex reports, PCIP exported CRMS data as spreadsheets, which also were beneficial for data analysis.

Conclusion

This article fills gaps in the literature on managing practice facilitation interventions. With oversight by an experienced team of QI practice transformation experts, adapting a CRMS to the practice facilitation process is feasible. A CRMS can effectively track practice facilitation activities with the detail needed to optimize implementation, and provides a data source for both research and practice. Such improvements could accelerate practice transformation and quality of care. Follow-up studies with NYC SIPs in priority neighborhoods are underway. They will expand on the use of this CRMS in practice facilitation for QI interventions for other chronic diseases, including diabetes and hypertension.

Authors' Note

The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality or the NYC Department of Health and Mental Hygiene.

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ORCID iDs

Marie Onakomaiya https://orcid.org/0000-0001-8027-8077
Allison Cuthel https://orcid.org/0000-0002-9978-6706

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