2019 NPCR VERMONT SUCCESS STORY

Vermont Cancer Registry: Ali Johnson, MBA, CTR

Systems Thinking Yields Process Improvements

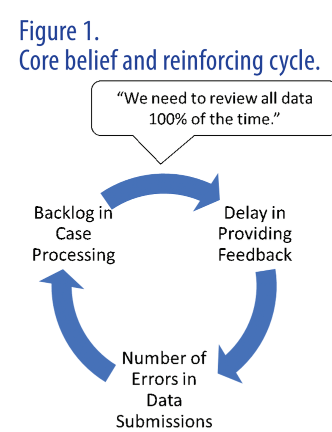
NATIONAL PROGRAM OF CANCER REGISTRIES
SUCCESS STORY

SUMMARY: Our registry faced a persistent one-year case processing backlog. We used systems thinking to diagnose the underlying factors causing the problem. We changed our core belief that “all data should be reviewed all of the time,” which allowed our registry to improve operations and resolve the backlog.

CHALLENGE: The Vermont Cancer Registry (VCR) had a chronic and significant backlog in its case processing, which included visual review (comparing coded values to free text) and consolidation (combining the best information about a tumor from two or more clinical reports).

Substantial amounts of staff time were being devoted to case processing tasks, yet little improvement was being made in productivity. VCR could not provide timely feedback to hospitals, which caused a delay in hospitals’ understanding of the need for corrections, which caused errors to persist in data being submitted, which caused more case processing to be required. (See Figure 1.) This created a vicious cycle that continued to make it difficult to make headway on our case processing backlog.

Figure 1.
Core belief and reinforcing cycle.



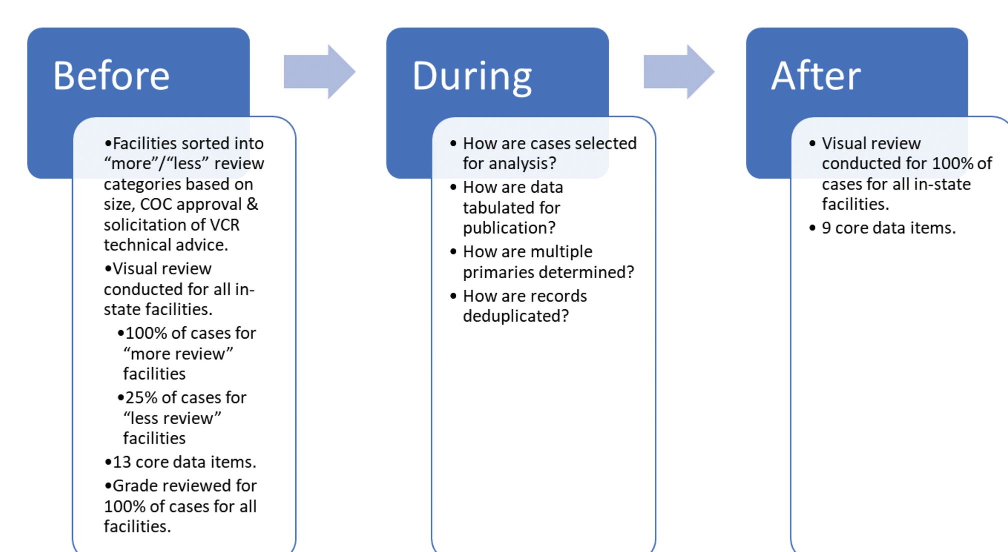
SOLUTION: With the support of the New England Public Health Training Center (https://www.nephtc.org), VCR staff members received systems thinking training. The learning objectives were to: (1) apply systems thinking tools to see the bigger picture behind complex problems; (2) demonstrate enhanced capacity to consider unintended consequences of actions; (3) distinguish between short-term fixes and high-leverage interventions; (4) use system archetypes to understand system performance and communicate about complex issues; and (5) recognize how we may be implicated in the very system challenges faced.

We began asking more questions to better diagnose what structures and patterns might be contributing to the observed problem.

Through three facilitated workshops, we realized that the prevailing mental model of “we need to review all data 100% of the time” was contributing to the dynamic. We also realized that we were reviewing data that were not even being used in publications or other data products. As a result, our team reevaluated the core data item list and subsequently reduced the number of data items to review from 13 to nine. We adopted a new mental model of “we need to review the data that are being reported and used.”

Figure 2 details the old visual review process, the criteria we used to hone the core data item list, and the new and improved visual review approach.

Figure 2. Approach to simplifying visual review process.



Another important part of the improvement process was to develop a systems-thinking framework, where VCR staff members created a shared vision, described the current reality, described the desired future state, and identified action steps and indicators to keep on track. Refer to Table 1 for an example.

Table 1. Excerpt of Systems Thinking framework used to manage quality improvement process.

Desired Future	Current Reality	Action Steps	Indicators
Visual review processing is up to date.	25/100% QA rule shifts burden to resolve errors to consolidation.	Revisit 25/100% rule.	Documented change to 25/100% rule.
	Core data items do not reflect our current QA priorities. List is too long. List is not being 100% adhered to.	Revisit list. Identify criteria for selecting data items before considering individual data items.	Documented criteria for core data item selection. Documented change to procedure.
	Cannot control size or timing of data flow.	Break VT hospital data submittals larger than 50 cases into files of 50 cases or fewer. Update procedure.	% VT hospital files with 50 or fewer cases (goal: 100%). Documented change to procedure.
		Use an agile approach to the mixture of core data items and % cases visually reviewed. Is the ratio working? If not, try a different ratio. Repeat.	Days from date received to date imported into CRS. % of cases that are expected to be visually reviewed that have been actually visually reviewed NPCR National and Advanced Data Quality Standard for completeness met.

RESULTS: VCR has a new vision statement for data processing:

- Morale is great.
- Visual review and consolidation processing are up to date. Workload is fair and sustainable.
- We follow clear and reasonable procedures. We provide current, usable, and constructive feedback to reporting sources.

We have eliminated our case processing backlog. However, this is only partly attributable to our new approach. The more significant factor is that we have no new data coming in due the major change in federal data collection requirements, which hospitals and the State are still in the process of meeting.

SUSTAINING SUCCESS: While we have not abandoned our original core belief that “all data should be reviewed all of the time,” we have committed to using an agile approach to the mixture of core data items and percentage cases visually reviewed. We will continue to ask, “Is the ratio working?” If not, we will try a different ratio, and keep repeating the process.

CONTACT INFORMATION:
Telephone: (802) 863-7644
https://www.healthvermont.gov/health-statistics-vital-records/registries/cancer

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion

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