



Increasing enrolment in a national VA transitions of care programme: a pre-post evaluation of a data dashboard and nudge-based intervention

Brigid Connelly ¹, Chelsea Leonard,¹ David Gaskin,¹ Theodore Warsavage,¹ Heather Gilmartin ^{1,2}

To cite: Connelly B, Leonard C, Gaskin D, *et al.* Increasing enrolment in a national VA transitions of care programme: a pre-post evaluation of a data dashboard and nudge-based intervention. *BMJ Health Care Inform* 2021;**28**:e100416. doi:10.1136/bmjhci-2021-100416

Received 24 May 2021

Accepted 21 October 2021

ABSTRACT

Background The rural transitions nurse programme (TNP) is a care coordination intervention for high-risk veterans. An interactive dashboard was used to provide real-time performance metrics to sites as an audit and feedback tool. One-year post implementation, enrolment goals were not met. Nudge emails were introduced to increase TNP veteran enrolment. This study evaluated whether veteran enrolment increased when feedback occurred through a dashboard plus weekly nudge email versus dashboard alone.

Setting/population This observational study included veterans who were hospitalised and discharged from four Veterans Health Administration hospitals participating in TNP.

Methods Veteran enrolment counts between the dashboard phase and dashboard plus weekly nudge email phase were compared. Nudge emails included run charts of enrolment data. The difference of means for weekly enrolment between the two phases were calculated. After 3 months of nudge emails, a survey assessing TNP transitions nurse and physician champion perceptions of the nudge emails was distributed.

Results The average enrolment for the four TNP sites during the ~20-month dashboard only phase was 4.23 veterans/week. The average during the 3-month dashboard plus nudge email phase was 4.21 veterans/week. The difference in means was -0.03 ($p=0.73$). Adjusting for time trends had no further effect. Four nurses responded to the survey. Two nurses reported neutral and two reported positive perceptions of the nudge emails.

Conclusion Drawing attention to metrics, through nudge emails, maintained, but did not increase TNP veteran discharges compared to dashboard feedback alone.

BACKGROUND

Older patients using the Veterans Health Administration (VA) for healthcare face a risky transition from urban hospitals back to their rural homes.¹ This has been attributed to inadequate communication around follow-up expectations, self-care needs, poor understanding of home care strategies and difficulties adjusting to new medications.²

The rural transitions nurse programme (TNP) is a national care coordination, quality improvement intervention led by one transitions nurse and one physician champion at select VA hospitals. TNP was designed to address the challenges faced by rural veterans through implementation of an evidence-based care coordination intervention.²⁻³ Based on pilot work,³ each site was expected to enrol 25–30 veterans each month.

Audit and feedback method is a common strategy to support programme implementation.⁴ TNP measures were audited and fed back to sites through an interactive data dashboard. Sites entered veteran demographic, intervention and enrolment data into the dashboard. The data were analysed and available to sites to support discussion of programme goals and opportunities for improvement. During the first year of TNP implementation, most sites recruited fewer than 25–30 veterans each month. Interviews with TNP nurses and champions suggested that low awareness of monthly enrolment counts was a factor. To enhance awareness and increase the number of veterans enrolled in TNP, we added a nudge-based intervention to the data dashboard feedback method. Nudge interventions introduce subtle changes to an environment, ‘nudging’ a person toward a certain behaviour, and require careful design and delivery.⁵ This project studied the design and implementation of the nudge intervention compared with the data dashboard audit and feedback approach alone.

METHODS

The TNP nudge intervention was studied as an observational pre-post subproject within a type II hybrid effectiveness-implementation quality improvement study.² Four VA hospitals



© Author(s) or their employer(s) 2021. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Denver Center of Innovation for Veteran-Centered and Value-Driven Care, Aurora, CO, USA

²Department of Health Systems, Management and Policy and Department of Biostatistics and Informatics, University of Colorado School of Public Health, Aurora, Colorado, USA

Correspondence to

Dr Heather Gilmartin;
Heather.Gilmartin@va.gov

Ms. Brigid Connelly;
brigid.connelly@va.gov

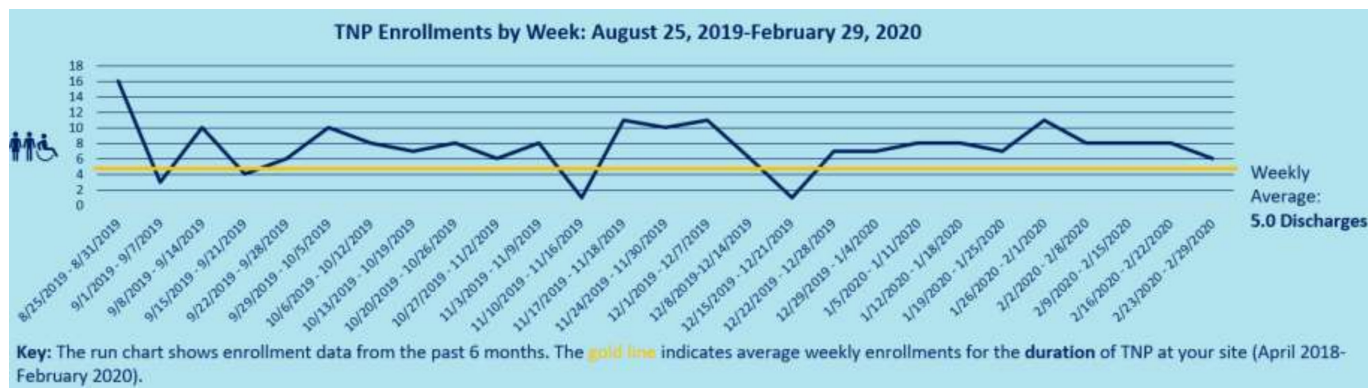


Figure 1 Sample site-specific run chart. This figure was created by the first and senior authors of this paper. Both gave their permission for its publication.

that were enrolling veterans in TNP for 22 months participated. The data dashboard plus nudge intervention trial period were scheduled for 3 months.

Data dashboard intervention

The data dashboard was hosted in Microsoft SQL Server Reporting Services on a VA-hosted, interactive interface designed specifically for TNP. Transitions nurses were encouraged to enter enrolment information daily. The data were descriptively (eg, means and counts) analysed using Excel formulas and put into data tables and charts. Site level data were available for review and retrieval within secure folders on demand.

Nudge-based intervention

The TNP nudge intervention was informed by two evidence-based design approaches: salience and default/positioning effect.⁵ Salience effect refers to the tendency to focus on noteworthy or novel items, while ignoring those that do not grab attention. We included a run chart in the email, using bright, colourful graphics to draw attention to the enrolment data (figure 1). These run charts were site specific and presented 6 months of weekly enrolment counts and a trend line depicting the average enrolment for the duration of the programme.

Default/positioning effect refers to the ease with which someone makes a choice, in our case, routinely viewing TNP enrolment data. The nudge intervention and run chart were pushed directly to sites' email inboxes weekly, an alternative to the dashboard, which required sites to pull their own data from a secure folder. The difference of means for weekly enrolment numbers between the two phases was calculated using Poisson distribution. To assess perceptions of the data dashboard and nudge intervention, a VA REDCap survey was distributed to the four transitions nurses and four site champions at the end of the trial period.

RESULTS

Over the 3-month trial period, 10 nudge-based emails were sent to each site. The average enrolment for all sites during the 22-month dashboard only phase was 4.23

veterans a week, or 15.9 veterans a month. The average enrolment for all sites during the 3-month dashboard and nudge email phase was 4.21 veterans/week and 18.75 veterans/month. The difference in means was -0.03 ($p=0.73$). Adjustment for time trends had no further effect. All four TNP nurses and zero site champions completed the post-trial survey. Half of the nurses ($n=2$) indicated that the run charts increased their awareness of enrolment expectations, but all four reported the nudge emails did not impact collaboration with site champions around enrolments goals.

DISCUSSION

We aimed to increase awareness of weekly enrolment counts and overall veteran enrolments in TNP by introducing a nudge intervention to augment a data dashboard audit and feedback method. We found some increase in awareness, but no change in enrolments during the nudge intervention. Enrolments continued lower than programme expectations. Our findings suggest that improving performance through audit and feedback is nuanced and requires engagement by sites to problem solving along with flexibility and frequent review by implementation teams.

Due to the lack of impact, we ended the nudge intervention and started reporting enrolment data on monthly transitions nurse learning collaborative phone calls with time allotted for discussion. We anticipate this approach will facilitate group problem solving regarding veteran enrolments and lead to programme adaptations and realistic goals to support sustainment of TNP at current sites. Additional methods to test in future work include audit and feedback through weekly text messages through the phone or a dedicated web-based app. While this may combat email fatigue and be a novel approach to engage participants, the efficacy of these nudge-based methods has been mixed across settings.^{6 7}

Our study has several limitations and should be viewed in the context in which it was delivered. Given our small sample size, this study was subject to selection bias. The interventions were implemented as part of a pragmatic

quality improvement project and were not designed to address causal or correlational questions.

CONCLUSION

A nudge intervention plus data dashboard audit and feedback method increased awareness of TNP goals but did not increase veteran enrolments. Given the challenges of influencing behaviour, we recommend frequent, rapid testing of evidence-based audit and feedback methods within programmes. Inclusion of qualitative approaches should be considered to better understand the underlying mechanisms that may be driving performance.

Twitter Brigid Connelly @brigidbconnelly

Acknowledgements We would like to thank the rural transitions nurse programme, transitions nurses and site champions who inspired and participated in this work.

Contributors BC, CL and HG jointly designed the study. DG designed and created the data dashboard. TW conducted quantitative analyses. BC, CL, DG, TW and HG revised the manuscript.

Funding This work was supported by the VA Office of Rural Health, which funded the rural transitions nurse programme. HG is supported by a career development award (number: 1IK2H×002587–01A1) from the United States Department of Veterans Affairs Health Services Research and Development Service of the VA Office of Research and Development.

Disclaimer The sponsor had no role in the design, conduct, analysis, interpretation or presentation of the study.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval In accordance with VA institutional review board, this study is a designated programme evaluation; thus no institutional review board approval was needed.

Provenance and peer review Not commissioned; externally peer reviewed.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Brigid Connelly <http://orcid.org/0000-0002-7196-8997>

Heather Gilmartin <http://orcid.org/0000-0002-0264-4059>

REFERENCES

- 1 Kosar CM, Loomer L, Ferdows NB, *et al*. Assessment of rural-urban differences in Postacute care utilization and outcomes among older us adults. *JAMA Netw Open* 2020;3:e1918738.
- 2 Leonard C, Lawrence E, McCreight M, *et al*. Implementation and dissemination of a transition of care program for rural veterans: a controlled before and after study. *Implementation Sci* 2017;12:1–8.
- 3 Burke RE, Kelley L, Gunzburger E, *et al*. Improving transitions of care for veterans transferred to tertiary Va medical centers. *Am J Med Qual* 2018;33:147–53.
- 4 Ivers N, Jamtvedt G, Flottorp S, *et al*. Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2012;154:CD000259.
- 5 Yoong SL, Hall A, Stacey F, *et al*. Nudge strategies to improve healthcare providers' implementation of evidence-based guidelines, policies and practices: a systematic review of trials included within Cochrane systematic reviews. *Implement Sci* 2020;15:50.
- 6 Cumberbatch JR, Barnes GC. This nudge was not enough: a randomised trial of text message reminders of Court dates to victims and witnesses. *Camb J Evid Based Polic* 2018;2:35–51.
- 7 Patel MS. Text-message nudges encourage vaccination. *Nature* 2020.