

BMJ Open Quality Improving health maintenance supervision in a paediatric IBD clinic

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ABSTRACT

Background Previsit planning (PVP) has been an integral part of clinical care for paediatric patients with inflammatory bowel disease (IBD) at Cincinnati Children's Hospital Medical Center since 2007. Over the past years, we have adopted several programmes to improve health maintenance supervision for our paediatric patients with IBD but did not have a sustainable way to provide health maintenance updates for every patient at every encounter that was concise and complete in the setting of an increasing patient population and fewer support staff to complete the work.

Methods Using quality improvement methods, we completed several Plan-Do-Study-Act (PDSA) cycles aimed at improving our centre's ability to provide complete health maintenance 'bundle' recommendations from 0% to 90% of patients over a period of 11 months.

Results First steps included consensus gathering and summarising evidence into guidelines suitable for the group. PDSAs centred on consensus building from standardised guidelines, using empty checklists for simulated and real patients, and use of autofilled checklists. After several PDSA cycles, we have improved our ability to provide complete health maintenance PVP from 0% to nearly 100% with very little variation.

Conclusion Using the health maintenance PVP process, we can now sustainably provide health maintenance guidance for all outpatient clinic visits. We have begun to scale up this work and anticipate over the coming months that we will be able to expand the health maintenance PVP to provide complete PVP for over 90% of patients for any scheduled encounter including biologic infusion visits. We anticipate that using this reliable process we can improve remission rates and reduce preventable infections for these at-risk patients.

PROBLEM

Our practice is located at a large, urban academic institution with a broad catchment area. We serve a population of about 700 paediatric patients with inflammatory bowel disease (IBD). Goals for previsit planning (PVP) were established at the onset of PVP in 2007 and centred around assuring data accuracy and appropriate medication dosing, determination of psychological functioning, recommendations for drug monitoring, and assuring health maintenance screening labs, vaccinations and procedures are up to date. Patient-centred outcomes have improved

because of this PVP process, but have stabilised over the past few years.

While health maintenance supervision is requested to be addressed as part of PVP, we identified a gap in our practice's ability to provide complete health maintenance PVP on a routine basis with no consistent process to ensure complete health maintenance bundle supervision at every encounter. Key drivers in the health maintenance supervision process included knowledge of appropriate guidelines, time to complete PVP, trained staff, data accuracy and patient/provider communication. Our aim was to increase the per cent of patients receiving complete health maintenance supervision at every clinic encounter from 0% to 90% by the end of November 2016.

BACKGROUND

Health outcomes for paediatric patients with IBD have shown more than 20% improvement in our centre and in other centres affiliated with the national paediatric Quality Improvement learning network ImproveCareNow.¹⁻³ PVP has been an integral part of our centre's care practice for IBD since 2007 and is now embedded in routine practice. While we have adjusted our PVP process to account for new providers, new medical knowledge and guidelines, and to allow for more in-depth population management for specific groups of patients, we identified a gap in the incorporation of health maintenance into routine clinical care, and attempts bcr-2017-013277at bridging this gap have proven difficult.

Health maintenance supervision for patients with IBD and other immunocompromised patients is crucial to ensuring reduction of complications from medical therapy such as infectious risk and malignancy, growth-related problems related to disease and other therapy-related concerns such as pregnancy risks. Thankfully, published guidelines exist for many aspects of IBD care including cancer surveillance, immunisations for immunocompromised patients and nutritional



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monitoring.⁴⁻⁶ Within our group, previous health supervision initiatives have focused on vaccination projects to improve immunisation and/or screening for infections such as pneumococcal pneumonia and hepatitis B, which may be particularly risky for immunocompromised patients. These projects have been successful using Plan-Do-Study-Act (PDSA) aimed at knowledge and consensus building, increasing clinic availability of certain vaccines and pending orders for providers.

While we experienced short-term success with previous health maintenance-centred projects, several barriers existed for sustainability of these initiatives. For example, automated order entry after preidentifying patients was the most successful intervention resulting in patients receiving vaccines, but the process depended on identification of patients prior to the visit. When a key provider was removed from the PVP process in its early stages, the process was no longer sustainable. Other barriers affecting sustainability of previous projects included multiple process owners (different clinical leads for vaccination projects), changes in staff affecting time available to complete 'traditional' PVP for a growing number of patients, and additional health maintenance supervision items which were less frequently required and more difficult to remember without prompting.

MEASUREMENT

All patients presenting for either clinic or infusion visits were assessed in 2-week increments beginning in January 2016. Patients were considered to have complete health maintenance PVP if all components of a patient's health maintenance supervision were completed as a bundle measure. The bundle measure included cancer screening, vaccinations or documentation of immunity to vaccinations or infectious risks, and nutritional assessment. Most patients had recommendations for nutritional assessment (vitamin monitoring) recommended at every office visit, but prompts to discuss cancer surveillance, reminders for annual tuberculosis screening and reminders for vaccinations such as pneumonia vaccines were sporadic and were not complete for most patients receiving routine PVP. While 86% of clinic patients received pneumococcal vaccination and 80% of infliximab patients received hepatitis B immunity surveillance at their peak, the prompts for these health maintenance items were done separately, only for particular patient groups (ie, immunocompromised or on infliximab), and were not sustainable in combination with other clinical needs. Hence, delivery of complete bundle of planned PVP for vaccinations or health maintenance supervision remained sporadic and unsustainable. Results of our baseline measurement showed that 0% of patients presenting for clinic visits or infusion visits received a complete health maintenance PVP bundle (figure 1).

DESIGN

First steps of design included review of published guidelines for health maintenance supervision which include

broad guidelines from the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition, the Crohn's and Colitis Foundation, and the Center for Disease Control.⁴⁻⁶ Consensus was obtained from a core group of IBD providers for areas where there might be discrepancies or lack of available published guidelines. This consensus guideline was then used as the first PDSA. Subsequent steps were meant to lead to automated incorporation of guidelines into weekly PVP process. The endpoint of the project was intended to provide timely information in a complete way that aligned with normal clinic flow.

STRATEGY

Consensus building

Early PDSAs focused on incorporating guidelines into a standardised bundle, incorporating physician feedback and creating a PVP checklist (see figure 1). These PDSAs were considered necessary as a foundation, but the end product was clearly not adequate for large-scale use in that the necessary documentation of labs, vaccinations given, immunity to vaccines, endoscopy timing, diagnosis date and other crucial pieces of information were scattered throughout the medical record. A subsequent PDSA piloted an empty health maintenance PVP form which was felt to give complete and appropriate health maintenance planning, but the effort and time to complete the form was not felt to be sustainable. This series of PDSAs was adapted to create more automation.

Automated data entry

Subsequent PDSAs focused on gathering data into an autocompleted checklist form using the electronic medical record. Using only one provider during this PDSA and only a few patients, we could evaluate the autocompleted PVP form side by side with a manual PVP checklist to assess for data accuracy, and the form was updated to ensure appropriate data would be reported. The final version contained autogenerated data in checklist form for completion by a medical provider.

Provider scale-up

At our centre, PVP is traditionally completed by a core group of providers for the rest of the division. While we hoped to have a patient's primary provider involved in completion of health maintenance PVP, since this is not part of the traditional workflow of the clinic, a PDSA of having all primary Gastroenterology physicians review the autocompleted health maintenance PVP form was unsuccessful. Next PDSAs involved sampling of patients belonging to physicians and nurses already involved in the established PVP process by reviewing data from the automated health maintenance PVP forms. When this was successful, an additional provider was added to plan for their own patients. Once it was clear that no further changes needed to be made to the PVP form, and that the form could be reviewed in a timely way, these existing providers were used to complete health maintenance PVP forms (in addition to routine PVP) for all other

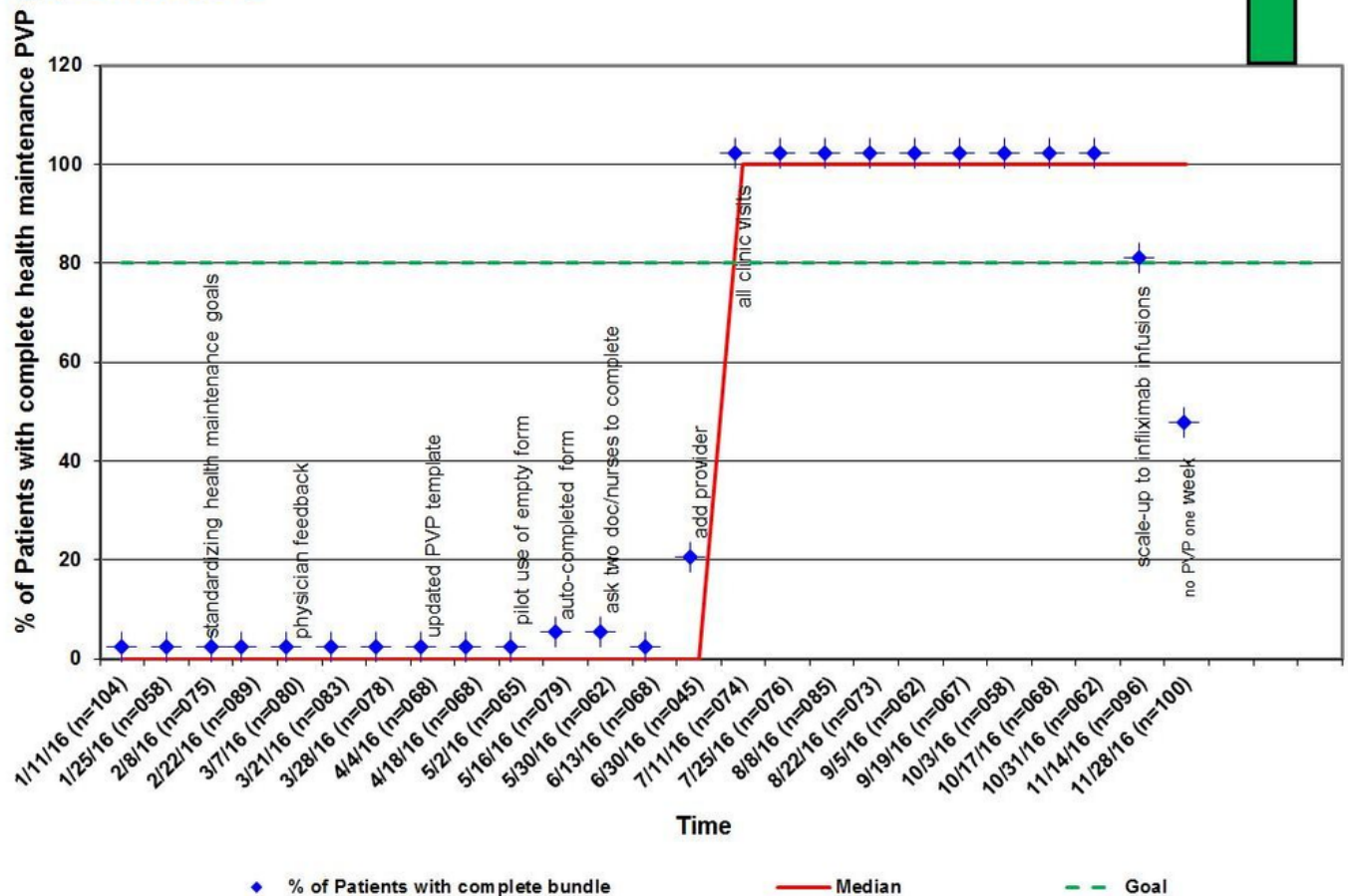


Figure 1 Run chart of health maintenance PVP completion. PVP, previsit planning.

providers' patients during the existing weekly PVP meeting. This intervention proved to be most effective combination to achieve timely and complete health maintenance PVP for a larger number of patients (up to 85 encounters per week).

Pended orders

To recreate the previous process of pending orders for vaccinations in clinic, a PDSA was performed to see if the clinic staff could use the health maintenance PVP as their notification for which patients needed vaccinations. This is the most recent PDSA being evaluated and seems well accepted by the clinic staff since it closely replicates the previously successful work. While this PDSA does not affect the completion of the health supervision PVP bundle, it ensures that the recommendations actually make it to the patient level care delivery.

RESULTS

Using a series of PDSA cycles, interventions were conducted to ensure complete health maintenance supervision using PVP. Patients receiving complete health maintenance supervision were measured every 2 weeks and were only considered complete if all aspects of health maintenance were addressed for that visit. During

the measurement time period we saw an increase in the ability to provide complete health maintenance supervision guidance from 0% of clinic visits to nearly 100% of visits during the improvement period, and is now a sustainable part of routine weekly PVP for all clinic visits (see figure 1). While not yet complete, we documented our first attempts at scale-up to all scheduled interactions (which includes clinic visits as well as infusion visits) during the last two time periods on our run chart. We were able to continue to provide complete health maintenance PVP for all clinic visits, but did not complete all infusion visit PVP during this reporting period. Because of the large number of patients with IBD cared for at our centre, providing PVP for all scheduled visits (both clinic and infusions) has not been part of routine care, but will continue to be a focus during the scale-up work to ensure continuous care going forward. Current vaccination completion rates are close to 70% and similar to final vaccination rates during previous focused vaccination projects.

Lessons and limitations

This project focused on combining multiple processes into one centralised and automated process to reduce

redundancy, and provide complete and timely preventative care to patients with IBD. Even though the improvements in this project were designed with the intention of improving the quality of care delivery, and ultimately patient and provider experience, change is not always easily received. Initially, we had hoped to scale up this process earlier, but quickly learnt that we needed to allow adequate time for adjustment to the new process along with acquisition of a sense of shared purpose from the key stakeholders (doctors, nurses and patients). Our group is fortunate to have a data analyst who supported automation of this work for the large patient population cared for in our group. In the absence of an analyst, the automation component of this work would not have been as straightforward for a population as large as ours, but even in a checklist format might still be feasible to support this type of work for selected patient encounters (as it was piloted in our group early in the project). We have not yet completed full scale-up to allow for health maintenance PVP to be delivered for all patient encounters (to include infusion patients as well) as we are evaluating capability and capacity within the IBD group, and the division, to complete this expansion of the work.

Lack of knowledge surrounding health maintenance supervision for IBD has been a limitation in our previous health maintenance supervision efforts. From a community standpoint, patients and families have been involved with the development of 'talking points' surrounding the need for specific vaccinations for immunocompromised patients, and we will continue to update the talking points based on family feedback and as new guidelines become available. Primary care physicians were initially mailed manually typed letters for preidentified patients receiving vaccines, but with staff turnover we are currently updating this process. We are currently working to sustain this process in a way to automatically generate letters at the time of vaccination.

We describe the development and improvement to our current health maintenance supervision process, but further work will be necessary to assure that subsequent steps of care delivery are occurring. Specific health supervision items currently included in the bundle, which will be measured in an ongoing way as outcome measures, will include per cent of patients who receive pneumococcal vaccination, per cent of patients screened for hepatitis B immunity and receiving vaccination if non-immune, and per cent of patients following drug monitoring guidelines for infliximab. While we primarily report the results of improvement in the process of health supervision, we anticipate that the improved and sustainable PVP process will translate to improved patient outcomes because of reduced rates of preventable infections, improved colorectal cancer surveillance and improved durability of biologic medications through the proactive use of therapeutic drug monitoring.

CONCLUSION

We identified a gap in our ability to provide timely, complete and concise health maintenance supervision recommendations for paediatric patients with IBD. Using the model for improvement and PDSAs, we successfully developed and implemented a streamlined and automated health maintenance PVP approach to aid physicians during their clinic visits and to allow for prevention of complications to patients with IBD. We will continue to expand this process to include infusion visits as well as to ensure all scheduled interactions become opportunities for health maintenance supervision. The improvement of this process has become crucial to streamlining our PVP in the context of increasing clinical demands. While the components of the PVP planner may change slightly over time, this template improves the ability to deliver up-to-date health supervision guidelines and drug monitoring guidelines for every visit with an ultimate goal of improving outcomes for patients with IBD.

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