

TABLE 14

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CPRS Postprocedural Outpatient Ordersets: Implementing a PDSA Cycle

David Kahat



CPRS Postprocedural Outpatient Order Sets: Implementing a PDSA Cycle

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Introduction

- Computerized Patient Records System (CPRS) is the electronic health record (EHR) used by the Department of Veterans Affairs. While revolutionary when it was created in 1997, there has been "limited substantial updates in the last twenty years."¹
- Without an updated, malleable EHR, documentation, patient care, and staff communication all may be negatively impacted.
- One area where outdated and inaccurate CPRS order sets impact patient care is within the Interventional Radiology department within the Minneapolis VA.
- The post-procedural order sets for common outpatient IR procedures performed at the Minneapolis VA require entering non intuitive, different workflows/algorithms for very similar procedures. Further, these order sets often have unnecessary, unstandardized fill in forms which add time for ordering providers and create confusion for nurses. Lastly, no formal training or shared document is available for residents to confirm they are properly entering orders.
- All of the aforementioned difficulties have created confusion and inefficiency for the residents and attending physicians entering orders, as well as for the nurses within the IR suite and postoperative floor caring for veterans.

Goals

- Standardize the CPRS order sets of 6 commonly performed outpatient procedures, to more accurately document patient care, reduce ambiguity for post procedural nursing staff, and reduce documentation time for clinicians.
 - The 6 commonly performed outpatient procedures are:
 - Paracentesis
 - Thoracentesis
 - Kidney biopsy
 - Liver biopsy
 - Lung biopsy
 - Generic biopsy template
 - During the pilot PDSA cycle, only the paracentesis and thoracentesis order sets will be changed.
 - Surveys will be administered to 2L nursing staff to assess if the new order sets depict post procedural care clearer and more accurately
- Create a reference document detailing the proper ordering process for the above procedures saved in the VA shared drive.
 - Residents will be assessed on their confidence and ability to enter the correct post procedural orders before and after viewing the document to gauge its effectiveness.

PDSA Cycle



Plan
Informal feedback was gathered from IR physicians, residents, and nursing staff investigating common order sets that create the most confusion and ambiguity, as well as the confusion with the CPRS ordering process

Do
2 tickets (for paracentesis and thoracentesis) have been submitted to the CACS team at the VA. This team is responsible for changing CPRS order sets within the Minneapolis VA. A reference document will be created detailing the proper method of entering orders through CPRS

Study
Feedback will be obtained from residents and nursing staff about the new workflow of the CPRS order sets as well as the efficacy of the reference document after a period of one month.

Act
Feedback will be studied and the remaining 4 order sets will be changed and the reference document altered as necessary. Repeat surveys will be created as needed to further study how the order sets and reference document can be improved

Current State


New State

Challenges to Implementing a PDSA Cycle at the VA

- Creating alterations within the CPRS system is time consuming. Two tickets were submitted to the CACS team at the Minneapolis VA in early 2023 to change the paracentesis and thoracentesis order sets within the CPRS interface. Months later, the tickets have still not been addressed. Turnaround times may have been prolonged due to staffing shortages within the VA, possibly as a result of recent downsizing.
- Proper implementation of a PDSA cycle requires a flexible, agile organization that can continue to roll out pilot studies to collect data and augment processes. With the prolonged turnaround times, PDSA cycles are difficult to implement.
- In hindsight, tickets should have been entered for all order sets at once. Though this would not have allowed a pilot cycle to have been completed with the new CPRS order sets, it would have ensured the order sets would eventually be addressed and made more accurate.
- We are eagerly awaiting a response from the CACS team to implement the updated order sets.

References

1. <https://hvpaas.org/cprs-inpatient/dashboard-a-novel-electronic-health-record-companion/>



Protocol in Practice: Improving Imaging Accuracy and Workflow at Hennepin Healthcare Through the Design and Implementation of a Protocol Workbook

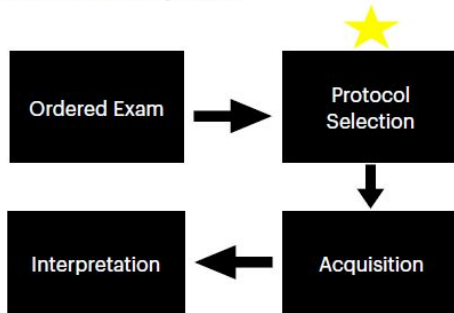
Ben Simpson, Thomas Kane

Protocol in Practice: Improving Imaging Accuracy and Workflow at Hennepin Healthcare Through the Design and Implementation of a Protocol Workbook

Thomas Kane, Ben Simpson, Dr. Scott Boeke

Background:

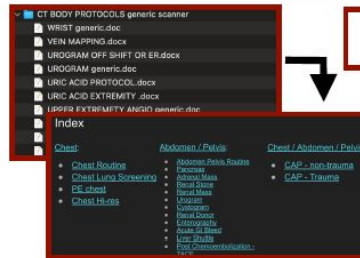
- Protocols are an important step in the imaging workflow that ensures each study is tailored to the clinical indication, anatomy, availability of resources, institutional guidelines, and patient specific considerations.



- Inconsistent or incomplete protocols can lead to suboptimal imaging, diagnostic delays, repeat exams, and increased radiation exposure.
- Radiology protocol workbooks are critical in streamlining protocols and they contribute to effective, safe, and timely evidence-based imaging care.
- A survey of current junior residents all reported the use of an equivalent protocol workbook at a different clinical site at least weekly.

Goals:

- Develop and implement a radiology protocol workbook at Hennepin Healthcare to standardize imaging studies and streamline protocoling workflow to:
 - Minimize errors in radiologic ordering and imaging acquisition.
 - Decrease non-interpreting call workload
 - Increase protocoling accessibility to residents.



Data Collection:

- The protocol workbook is live and accessible to residents / staff.
- After a 3 month period, users will be surveyed on:
 - Workbook usefulness, accessibility, and ease of use
 - Protocol burden
 - Improvements to the workbook
- Data will be stratified by graduate year.
- Longitudinal data collection including effect on protocol related errors will be performed at 6 months, 1 year and 2 years.

Conclusions

- The protocol workbook increases accessibility of protocols and consolidates information.
- We believe this will be an effective tool to improve radiology workflow and decrease non-interpretive burden.

Future Directions

- Extend the protocol workbook to neuroradiology protocols.
- Longitudinal data on effect on protocol related errors.

Acknowledgements:

Dr. Gopal Punjabi, Dr. Scott Boeke

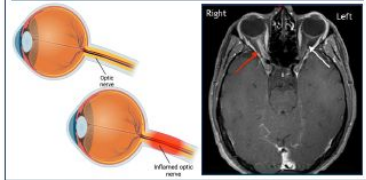
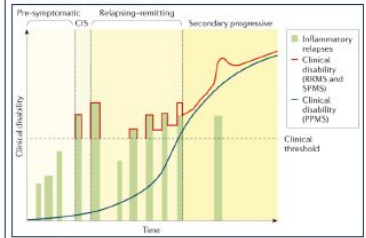


Pupillary Light Reflex and its Implications in Multiple Sclerosis

Darwing Padilla Rolon

Background and Purpose

- Multiple sclerosis (MS) is a chronic autoimmune disorder of the central nervous system.
- Most common disabling neurological disease of young adults with symptom onset generally occurring between the ages of 20-40 years.



Significance and Rationale

Pupillary diameter is controlled by the sphincter pupillae, under the control of the parasympathetic nervous system, and the dilator pupillae, under the control of the sympathetic nervous system.

Pupillometry: "the new ER doctor"

- Quickly and accurately measures pupil
- Great quantitative tool for research.

Pupillary constriction	Pupillary dilation
Bright light	Low light
Sphincter pupillae contracts (parasympathetic innervation)	Dilator pupillae contracts (sympathetic innervation)

Pupillary light reflex measured with quantitative pupillometry has low sensitivity and high specificity for predicting neurosensory after traumatic brain injury. (Trent et al. 2023)

Evaluating the reliability of neurological pupillary index as a prognostic measurement of neurological function in critical care patients. (Ghauri et al. 2022)

Study Design

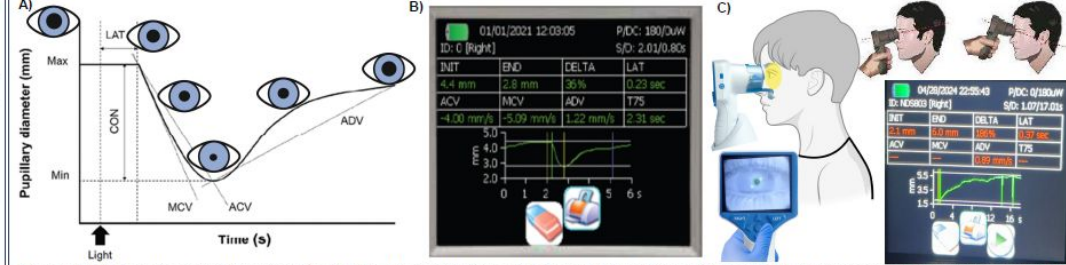


Figure 1. Pupil dynamics and pupillometer methodological design. A) Representative graph of the pupillary light reflex (PLR). B) Display of results of pupillometer after PLR testing. C) Methodological approach on patients and mistakes to avoid while performing test on subjects.

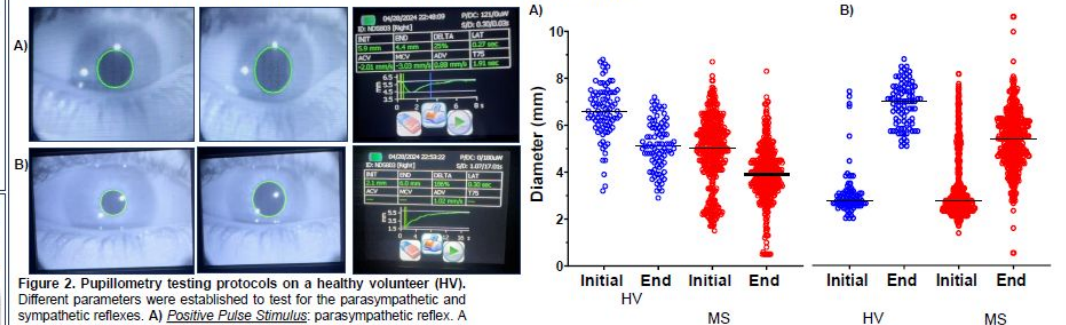


Figure 2. Pupillometry testing protocols on a healthy volunteer (HV). Different parameters were established to test for the parasympathetic and sympathetic reflexes. A) **Positive Pulse Stimulus:** parasympathetic reflex. A standard bright pulse over a dimmer background triggers a pupil constriction. B) **Negative Pulse Stimulus:** sympathetic reflex. A dim pulse over a brighter background triggers a dark reflex and pupil dilation.

Future Directions

- Defects in visual pathway (optic nerve)
- Defect in parasympathetic output tested in protocol 1
- Defect in sympathetic output tested in protocol 2

HV MS

EDSS vs. Initial Pupil Diameter

RNFL vs. Pupil Contraction Latency

(Bitirgen et al. 2021)

Acknowledgements

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Quality Improvement Initiative to Increase Glucagon Prescribing Rates in Adults with Type 1 Diabetes Through a Clinical Workflow Intervention

Jaspreet Batth, Filip Jovanovic

FIRST

Quality Improvement Initiative to Increase Glucagon Prescribing Rates in Adults with Type 1 Diabetes Through a Clinical Workflow Intervention

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Background

- Approximately 4% of individuals with T1D are hospitalized annually due to severe hypoglycemia
- Glucagon is a life-saving treatment for severe hypoglycemia and is recommended by the American Diabetes Association for all individuals treated with insulin.
- Despite this, only 44% (2,369 of 5,372) of adults with T1D in the M Health Fairview system are prescribed glucagon.

Objective

- To increase the percentage of adults with T1D with an active glucagon prescription at the M Health Fairview Maple Grove Diabetes and Endocrinology Clinic from a baseline of 65% to 80% by January 2025.

Methods

- Our PDSA cycle included a four-week intervention at the M Health Fairview Maple Grove Diabetes and Endocrinology Clinic.
- Medical assistants flagged missing glucagon prescriptions during the medication reconciliation process.
- Providers were prompted to discuss and prescribe glucagon during the visit.

Results

	Number of adults with T1D seen in clinic	Number of adults with T1D with an active glucagon prescription	p-value
Pre-Intervention (9/9/2024-10/6/2024)	34	22 (64%)	p=0.03
Post-intervention (11/4/2024-11/30/2024)	64	54 (84%)	

Conclusion and Next Steps

- Clinical workflow intervention increased glucagon prescribing rates in adults with T1D to >80%, meeting our objective.
- Next step: To scale our intervention by developing an Electronic Health Record based decision support tool to prompt glucagon prescribing in Primary Care and Endocrinology clinics.



Quality of Life and Cost-Effectiveness of Transitioning from Intravenous to Subcutaneous Vedolizumab in a Veteran Population: A Prospective Study

Suchapa Arayakarnkul

PURPOSE / OBJECTIVES

Inflammatory bowel disease (IBD) is a chronic condition that can impact quality of life (QoL) often causing significant disability and financial burden.

Traditionally administered through intravenous (IV) infusions, vedolizumab (VDZ) is a biologic used to treat moderate to severe IBD.

Recently, the U.S. Food and Drug Administration approved a subcutaneous (SC) formulation of VDZ for self-administration.

We **hypothesize** that transitioning patients from IV to SC formulations will **improve patients' QoL by limiting the burden of time spent at an infusion center while also reducing infusion-related costs**.

MATERIAL & METHODS

Single center quality improvement initiative and cost-effectiveness analysis - patients at the Minneapolis Veterans Affairs Medical Center who were on IV VDZ for ulcerative colitis (UC) or Crohn's disease (CD) were prospectively contacted and offered a transition to SC VDZ (July-October 2024).

- Outcomes: **proportion of patients who agreed to transition, reasons for declining, impact of infusions on work and life, costs delta.**
- We used the **IBD-control-8 questionnaire** for QoL assessment, and the **Simple Clinical Colitis Activity Index (SCCAI)**, and **Crohn's Disease Activity Index (CDAI)** for clinical assessment of disease activity.
- **Costs** related to **medication, supplies and personnel for administration** were compared between the two routes.

Continuous variables were reported as mean (standard deviation) if normally distributed, and as median (interquartile range) if data distribution was skewed.

RESULTS

- Of 14 patients on IV VDZ, 10 **(71.4%) agreed to transition to SC VDZ** (mean age: 54.7 years, 80% male, UC: 7, CD: 3) (**Table 1**).
- Reasons for denial of the transition included **fear of ineffectiveness** (N=3) and **needle aversion** (N=1). Results of the impact on work and life questionnaire are listed in **Figure 1**.
- The mean distance of travel for the infusion was 12.5 (IQR 6.5-26.3) miles resulting in 3.5 (SD 1) hours patients spent on each session.
- Mean IBD-control-8 questionnaire for QoL prior to the switch was 13.8/16. All, except one patient, were in clinical remission at baseline (90%), as assessed by SCCAI for UC and CDAI for CD.
- Based on the standard IV regimen every 8 weeks and SC every 2 weeks, **the annual maintenance cost**, including direct and indirect costs, was **higher in SC than IV formulation by \$1594**.

Transition from IV to SQ Vedolizumab reduces the patient's time committed to medical care and improves the infusion center's accessibility with comparable costs.

RESULTS

Figure 1. The impact of intravenous vedolizumab on work and life prior to the transition to subcutaneous formulation

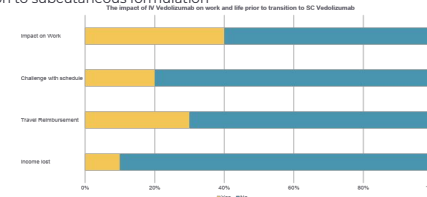


Table 1. Demographics of patients on intravenous (IV) vedolizumab who agreed to transition to subcutaneous (SC) formulation

Baseline characteristics	Total (N=10)
Age (mean ± SD)	54.7 ± 16.9
Sex	
Male	8 (80%)
Female	2 (20%)
Race	
White	8 (80%)
Black or African American	1 (10%)
Other	1 (10%)
Inflammatory bowel disease	
Ulcerative colitis	7 (70%)
Crohn's disease	3 (30%)
Interval of the intravenous infusion (weeks)	
Every 6 weeks	4 (40%)
Every 8 weeks	6 (60%)
Duration on IV vedolizumab prior to transition to SC (months, median (IQR))	36 (17-74)
Means of travel to infusion center	
Self	9 (90%)
Family	1 (10%)
Main concern regarding the transition	
Self-injection	2 (20%)
Storage	1 (10%)
Efficacy	1 (10%)
Adverse events	1 (10%)
None	5 (50%)

SUMMARY / CONCLUSION

- 71.4 % of patients on IV VDZ agreed to switch to SC VDZ.
- All, except one patient, were in remission at the time of the switch.
- The main reason for declining was fear of losing response with the SC formulation.
- A follow-up is planned to determine the effect of switching from IV to SC VDZ on patients' disease activity and QoL.