

VIONE Polypharmacy Reduction and Medication Optimization Model: A 10-Year Journey

Saraswathy Sasha Battar, MD^{a,b}; Kimberly R. Watson Dickerson, PharmD, BCPS^c; Christopher Sedgwick, PharmD^d; Timothy Cmelik, RPh, MBA^c; Eric C. Spahn, PharmD^e; Lavern Esters^c; Melva J. Hobbs^c; Helen B. Omuya, PharmD, MPA, PhD^f

Background: The aging US population is associated with chronic illnesses and increased medication use, some of which may be potentially inappropriate medications. While medications provide health benefits, they also cause undesirable adverse effects such as drowsiness, nausea, and confusion. Polypharmacy can create cumulative burdens for patients. VIONE—Vital, Important, Optional, Not indicated, and Every medication has an indication—is a medication optimization and deprescribing methodology used at the Veterans Health Administration (VHA).

Observations: Introduced in 2016, VIONE is used in 139 US Department of Veterans Affairs medical centers. It is supported by the VHA electronic health record (EHR) infrastructure with integrated web-based tools that empower and enable clinicians

to collaborate in real time and at diverse settings across the continuum of care. Between August 2016 and July 2026, VIONE implementation resulted in deprescribing > 4.3 million potentially inappropriate medications, affecting > 1.5 million veterans. Used by > 29,000 clinicians, it has resulted in an estimated annualized cost avoidance of \$479 million.

Conclusions: VIONE methodology is a VHA EHR-embedded medication optimization tool that has improved VHA patient safety through methodological, evidence based-polypharmacy reduction and deprescribing. Its expanding user base and sustained use highlights the value of empowering staff-driven innovation with system-wide infrastructure and organizational support that could serve as a foundational basis for future system-wide adaptations.

This article has been adjusted for space considerations. The complete version, including supplemental materials, can be found online.

Author affiliations can be found at the end of this article.

Correspondence:
Saraswathy Battar
(sara.battar@gmail.com)

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VIONE is a conceptual and practical model for planned cessation of potentially inappropriate medications (PIMs) and ongoing medication optimization. The program promotes organizational transformation and focuses on a culture of safety while emphasizing patient-centered care. Polypharmacy (use of ≥ 5 medications) and hyperpolypharmacy (use of ≥ 10 medications) are increasingly prevalent because of population aging and multimorbidity.¹ Polypharmacy is especially concerning for older adults who are at greater risk of adverse drug events (ADEs).² Polypharmacy has been associated with increased risk of ADEs, drug-drug interactions, medication nonadherence, impaired functional status, cognitive impairment, and higher medical costs.^{3,4} Research highlights the prevalence and dangers of polypharmacy, which is associated with common causes of death in the United States, as well as suggestions to address preventable adverse outcomes from polypharmacy and PIMs through deprescribing.⁵⁻⁷

VIONE PROGRAM

VIONE is a medication optimization methodology and deprescribing strategy used at the Veterans Health Administration (VHA) that is integrated into the Computerized Patient Record System (CPRS). It is an electronic tool that empowers clinicians to

use 5 filters to categorize medications as: Vital, Important, Optional, Not indicated, and Every medication has an indication (Supplemental Materials).

Vital and important medications are rationally preserved. Thoughtful, methodical efforts are placed to deprescribe optional (whether administered or not) or not indicated (causing more harm than good) medications and evaluate every medication without a justifiable reason. It is a holistic approach to streamline and optimize medication prescribing practices.

VIONE web-based tools, educational curricula, and formal and informal resources are available to clinicians and updated periodically. VIONE Academy operates to elicit, respond, and exchange field-based inquiries. Brochures have been created for clinicians, patients, and other populations to improve understanding and adherence by targeted end users.

VIONE can be applied across all patient care settings, including hospitals, homes, outpatient facilities, and via telehealth. The VHA provides training to most US medical, nursing, and allied health care professionals (HCPs). With VIONE integrated into CPRS, there is great potential to ensure that HCPs and trainees are equipped with the tools needed to optimize medication prescribing.

Proactively addressing preventable

medical errors could lead to significant reductions in morbidity and mortality, and provide substantial cost savings. Emphasizing due actions, mitigating complexity, addressing communication failures, underreporting, promoting transparency, and staff empowerment may mitigate risks associated with PIMs. Enterprise-wide dissemination and cultural transformation of evidence-based deprescribing strategies may amplify the impact of patient safety initiatives.

This report follows up on a previous study and details the 10-year journey of a VHA clinical team while creating, disseminating, and maintaining a product within the largest integrated US health care system.⁸ The use of VIONE methodology illustrates the importance and capabilities of an innovative idea conceived within and supported by the VHA that continued to experience incremental growth in clinician acceptance rates. Metrics and outcomes support positive cultural change (making medications work for and not against patients) by investing in dissemination and sustainment strategies to transform ideas into actions with desirable and sustainable outcomes.

Development

VIONE methodology was conceived by the then-associate chief of staff for geriatrics and extended care at the Central Arkansas Veterans Healthcare System (CAVHS) in 2016. Launched in a 15-bed inpatient unit, the VIONE team incrementally added more technical and subject matter experts. The core VIONE team had 4 members, including a geriatrician (concept developer and team leader), an academic detail pharmacist (implementation leader), and 2 pharmacy informatics and analytics specialists. The team benefited from supportive guidance from the CAVHS Pharmacy service lead, medical center directors, clinical application coordinators, VA Central Office colleagues, and end users. Pharmacy informatics and analytics tools program managers designed dashboards, electronic health record (EHR) analytics tools, and other web-based tools to access the US Department of Veterans Affairs (VA) Corporate Data Warehouse (CDW). Two clinical application coordinators offered structured guidance and

EHR integration. The multisite and multidisciplinary team worked voluntarily and built coalitions across the nation.

VIONE initially relied on pen and paper. It gained more attention after winning the 2017 VHA Shark Tank Competition, which recognized its potential to make a significant impact across VHA. Critical milestones include expansion of the core team, the creation of clinical decision tools, and the development of dashboards. In 2024, VIONE surpassed 1 million veterans impacted.

Design and Implementation

Toolkits were developed to guide implementation. VIONE training modules and refresher courses are about 30 minutes long. VIONE discontinuation options are available in CPRS under the medication tab. End users follow the same steps in CPRS to identify a medication and click on discontinue. VA medical centers (VAMCs) can customize the visibility in CPRS of VIONE and clinicians can select the most appropriate reason for discontinuing the medication.

VIONE web-based dashboards capture the date and reasons selected and update the national, facility, clinical setting, medication, and other data daily. Users are expected to document relevant details in the clinical notes, according to routine practices, which are captured by the VIONE electronic architecture. When using VIONE in CPRS, clinicians can access references and educational guidance to make evidence-based decisions at point of care interactions. All relevant VIONE resources are accessible to VHA end users.

Staffing for site implementation varies by facility. In our experience, established pharmacy services reported benefits from designating of a lead HCP and lead clinical pharmacist.

Implementation tools for information and end user education were created and included in a toolkit; 4 dashboards collect and display both retrospective and prospective data. These tools identify veterans eligible for a comprehensive medication review and determine appropriate medications for deprescribing.

Cost avoidance is the cost of medications that otherwise would have continued polypharmacy to be filled and paid for by

TABLE. VIONE Program Growth

Metric	March 2019	September 2022	September 2023	September 2024	November 2025
Unique veterans	17,728	about 500,000	723,000	991,000	1,320,000
Unique deprescribed medications	38,578	1,170,000	1,800,000	2,580,000	3,630,000
Cumulative cost avoidance estimate, \$	3,500,000	1,030,000	165,000,000	265,000,000	387,000,000
Clinician users	< 15	11,900	16,500	22,243	26,332
Facility clinical settings used	19	116	134	138	138

the VHA if they had not been deprescribed. Cost avoidance is projected for ≤ 365 days.

Online VIONE dashboards capture, analyze, track, and display medication discontinuation data. These dashboards also monitor overall VIONE outcomes in all clinical settings, including telehealth. Dashboards gather data on VIONE use by location, medication, HCP, reasons for discontinuation, VIONE notes, patient demographics, and cost avoidance. This data-driven approach promotes continuous process improvement by identifying trends, patterns, and targeted areas needing attention. The VIONE informatics team accesses VA CDW data and uses Microsoft Reporting Services and Power BI to create dashboards that enable highly detailed tracking and analysis. This integration of informatics and data analytics exemplify the vital importance of data-driven decision making in health care.

VIONE's multifaceted project implementation strategies empower facilities, HCPs, patients, and caregivers to invest in shared decision making. Educational and informational implementation resources include VIONE logos, infographics, the VIONE toolkit, population health management dashboards, formal and informal presentations, navigation strategies across VHA hierarchical channels, information on involved clinicians, facilitators and barriers to implementation, and results sharing. Online VIONE tools include CPRS drop-down menus, dashboards that capture, analyze, track and display medication discontinuations, and monitor the impact of implementation across various clinical settings.

DISCUSSION

VHA infrastructure, technical expertise, diverse network of HCPs, and support from hierarchical, formal, and informal peers

transformed a concept from a small core team of committed staff into an enterprise-wide dissemination project with steady growth. VIONE facilitated medication optimization and polypharmacy reduction to improve patient safety, HCP engagement and patient education efforts. Incremental growth in patient and clinician acceptance rates, scholarly insights and patient-centered, evidence-based outcomes data sustained medication optimization and polypharmacy reduction outcomes. VIONE combines clinical evidence for best practices, an interprofessional team approach, patient engagement, adapted use of existing medical records systems, and high reliability organization principles for effective implementation.

Multimodal approaches that include education, risk stratification, population health management interventions, research, and resource allocation helped transform organizational culture in VHA facilities, thereby enabling patient-centered care and shared decision making between HCPs and patients. VIONE is used in various clinical settings across 139 VAMCs by > 29,000 clinicians with an estimated cost avoidance of > \$479 million. To date, > 1.5 million veterans have benefited, with > 4.3 million prescriptions discontinued that were unnecessary or no longer needed (Table). The deprescribed medications do not include over-the-counter medications, medications that have been deprescribed for < 30 days, duplicates, medications that have been restarted within 30 days, decreased dose or alternate medications prescribed, and time limited prescriptions such as antibiotics.

VA Medication Information Management and Medication Reconciliation programs operate with goals of reducing ADEs. The Joint Commission has defined

minimum standards as part of the National Patient Safety Goals and also recognizes the importance of successfully managing patient medical information. These goals align with VIONE. Both programs establish standards to maintain and communicate accurate patient medication information that includes identifying, addressing, and documenting medication discrepancies found in the EHR.⁹ This report illustrates the 10-year journey of VIONE, a VHA project for planned cessation or safer substitution of PIM.

VIONE is an effective, user friendly and flexible tool. It may continue to adapt for additional evidence and experience-based polypharmacy reduction and medication optimization to improve standards of patient safety with safe, effective, efficient, compassionate patient-centered care across most clinical and in-home care settings. VIONE educational and informational practice guidance resources and systems-based infrastructure enabled integrated and effective assessments and points of care interactions across the continuum of care.

Barriers

VIONE implementation gained end user clinician acceptance despite being an optional polypharmacy and medication optimization strategy. Modified marketing and dissemination strategies to further promote field uptake with customized modifications could result in higher acceptance rates with improved outcomes. The steady growth of users demonstrates that early adopters, early majority change agents, and interested peers remain active participants serving to continually refine its methodology. While recognition through the Innovation Ecosystem, as well as local, national, and international awards fostered credibility, orchestration of succession planning and facilitation of organizational oversight to streamline project growth and expansion could pay dividends.

The VIONE core team remained steady with 3 regular interdisciplinary members with periodic and vital contributions from ad hoc experts. Succession planning along with a cadre of designated work experts duly aligned under a national program office would benefit ongoing polypharmacy

reduction and medication optimization efforts with sustainment and spread, modernization, along with other relevant proactive talent recruitment and retention strategies.

CONCLUSIONS

VIONE started with a VHA geriatrician on a 15-bed inpatient subacute rehabilitation program. With effective organizational sustainment structure and support, the program has expanded to 139 VAMCs, used by > 29,000 HCPs, and impacted > 1.5 million veterans across various clinical settings. As of July 9, 2026, > 4.3 million PIMs have been deprescribed with an estimated annualized cost avoidance of about \$479 million. Efforts to sustain VIONE have generated valuable experiences for both veterans and HCPs.^{10,11}

The data displayed in the VIONE dashboard provide real-time feedback to local VIONE teams and local stakeholders to show and track progress.¹² VIONE methodology and granular data are not a panacea to address PIM but offer viable options to reduce polypharmacy and medication optimization efforts. It has been widely accepted within the VAMCs as a simple and practical tool to improve patient safety. The foundational blocks from VIONE project could be integrated in various capacities to future VHA endeavors targeting improved patient safety through polypharmacy reduction and medication optimization. While improving patient safety, this VHA program inspired participants to think differently, sparked innovation, built confidence, and created lasting opportunities for research, education, evidence-based implementation strategies, and professional development.

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Author affiliations

^aThomas H. Corey Veterans Affairs Medical Center, West Palm Beach, Florida (retired)

^bCharles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton (retired)

^cCentral Arkansas Veterans Healthcare System, Little Rock

^dVeterans Integrated System Network 15, Kansas City, Missouri
^eVeterans Health Administration, Office of Patient Care Services
^fUniversity of Alabama at Birmingham

Author disclosures

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Ethics and consent

This article includes no patient information and adheres to all relevant ethical principles.

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