Guidance Document for Improved Smart Pump Usage and Governance
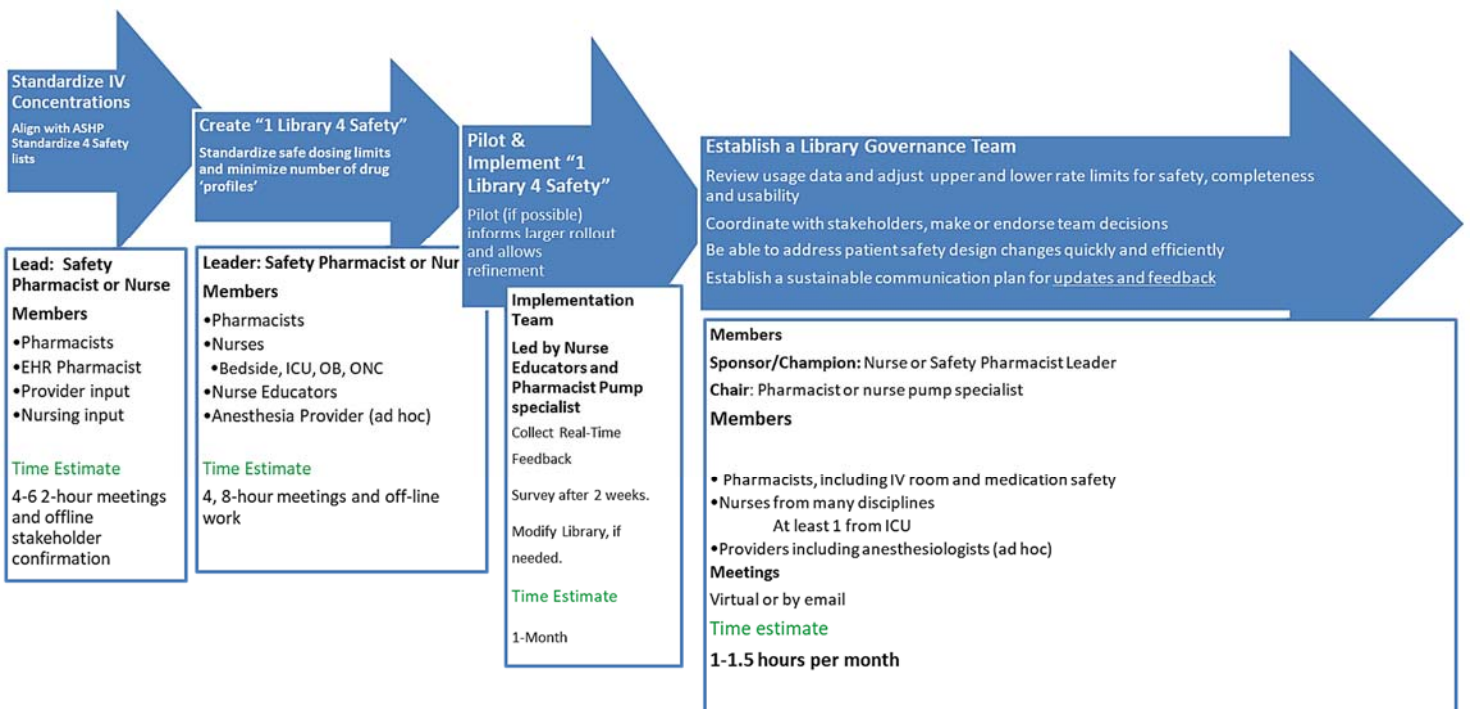
Background

Many medication errors can be prevented through safe medication practices, however, sometimes these errors — including those involving "smart" infusion pumps — are caused by a combination of human and technical risk factors, including fatigue, distraction, drug library overrides, deficiencies, or misuse. Smart infusion pumps combine computer technology and drug libraries to limit the potential for dosing errors.

Most United States hospitals have invested in smart infusion pumps with Dose Error Reduction Software (DERS), which have demonstrated their safety potential and have been on the market for 15 years. Still, many errors occur because health care organizations and clinicians are not optimizing the use of DERS technology.

Both ISMP and The Joint Commission have made recommendations (see references) to utilize DERS to reduce errors. The use of this software requires regular attention to keep it current and safe for our patients.

This document provides guidance to improve the usage of the software and how to set up a hospital or system governance team to systematically keep it updated.

Standardize IV Concentrations
Align with ASHP Standardize 4 Safety lists

Lead: Safety Pharmacist or Nurse
Members
• Pharmacists
• EHR Pharmacist
• Provider input
• Nursing input

Time Estimate
4-6 2-hour meetings and offline stakeholder confirmation

Create "1 Library 4 Safety"
Standardize safe dosing limits and minimize number of drug 'profiles'

Leader: Safety Pharmacist or Nurse
Members
• Pharmacists
• Nurses
  • Bedside, ICU, OB, ONC
• Nurse Educators
• Anesthesia Provider (ad hoc)

Time Estimate
4, 8-hour meetings and off-line work

Pilot & Implement "1 Library 4 Safety"
Pilot (if possible) informs larger rollout and allows refinement

Implementation Team
Led by Nurse Educators and Pharmacist Pump specialist
Collect Real-Time Feedback
Survey after 2 weeks.
Modify Library, if needed.

Time Estimate
1-Month

Establish a Library Governance Team
Review usage data and adjust upper and lower rate limits for safety, completeness and usability
Coordinate with stakeholders, make or endorse team decisions
Be able to address patient safety design changes quickly and efficiently
Establish a sustainable communication plan for updates and feedback

Members
Sponsor/Champion: Nurse or Safety Pharmacist Leader
Chair: Pharmacist or nurse pump specialist
Members

• Pharmacists, including IV room and medication safety
• Nurses from many disciplines
        At least 1 from ICU
• Providers including anesthesiologists (ad hoc)
Meetings
Virtual or by email
Time estimate
1-1.5 hours per month

Key Areas to Address in Smart-Pump Review Process

Individuals involved in the review process (a.k.a. The Smart Pump Governance Team)

- **Sponsor:** Medication Safety Pharmacist

- **Chair(s):** Pharmacist and/or Nurse Pump Specialist

- **Potential Members:** Pharmacists (including IV room, clinical, operational, and/or medication safety), Nurses (from many disciplines, educators, and at least one from ICU), Providers, ad hoc (including Anesthesiologists)

Timeline/schedule for review

- All profile areas must be reviewed annually, at a minimum

- Facilities to conduct a full review of drug dosing limits quarterly

    - Review schedule of individual profiles or grouping of profiles to be determined by each facility

    - Not every profile needs to be reviewed every quarter

- Additional reviews (i.e., monthly) should be conducted as needed for medication errors

Content for review

- Data reviewed should include, *at a minimum*, the following information: top ten drugs, formulary updates, overall compliance with dosing limits, and compliance with each profile

- Additional information that should be reviewed, *when available*: good catches, bad catches, patient outliers, ISMP Action Items, any medication errors needing investigating

- Bedside audits should occur if possible (i.e., patient identifier, correct profile, drug dosing limits in use)

Key Areas to Address in Smart-Pump Review Process

Approval process for recommended changes

- Start with pharmacist review → include nursing review/input → suggested changes go to an interdisciplinary committee such as Medication Safety Committee, or equivalent committee, for approval

- Suggested changes are considered a consent item unless specific changes warrant a deeper discussion and review

Communication and education to various departments (recommend at least <u>one</u> of these strategies with each update)
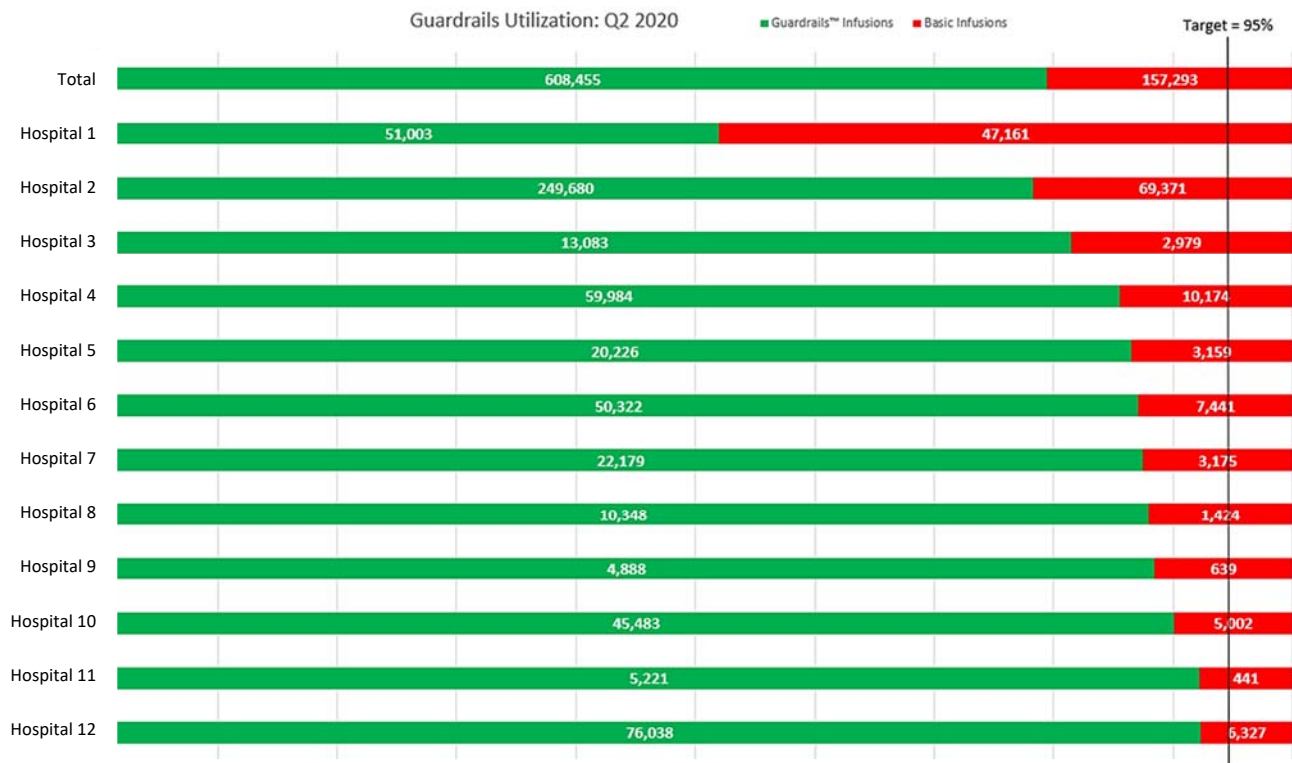
- Alerts in CPOE system for a couple of days post change implementation

- Share information in morning huddles, bed huddle, safety huddle (charge nurse or nurse manager), phone call (whatever the mechanism is for each facility) at least quarterly with updates, and then as needed for additional information

- Transportation, BioMed, Facilities, Supply Chain, Central Supply, EMS, etc. (whoever is holding on to pumps for cleaning/maintenance)

- Pump Safety Day (once per month) – share info from audits, share updates to Smart Pump Drug Library, recalls/alerts from the company, changes to CPOE system, safety tips

- One-page summary sheet sent out to Nursing Directors/Managers to be shared with end users

Follow up and continued review to monitor post-implementation changes

- Review at least the Top Ten Drugs from the previous quarter to see if improvements have occurred

- Review any other changes from the previous quarter as needed

- Double-check medication incident reporting system for new infusion or pump-related incidents from the last quarter

- Medication Safety Team or Smart Pump Governance Team reviews at least once case-based discussion at least quarterly

Example of Medication Use Safety Team Smartpump Dashboard

Guardrails Utilization: Q2 2020 — Guardrails™ Infusions / Basic Infusions — Target = 95%

	Guardrails™ Infusions	Basic Infusions
Total	608,455	157,293
Hospital 1	51,003	47,161
Hospital 2	249,680	69,371
Hospital 3	13,083	2,979
Hospital 4	59,984	10,174
Hospital 5	20,226	3,159
Hospital 6	50,322	7,441
Hospital 7	22,179	3,175
Hospital 8	10,348	1,424
Hospital 9	4,888	639
Hospital 10	45,483	5,002
Hospital 11	5,221	441
Hospital 12	76,038	5,327

References and Additional Resources

- **The Joint Commission Sentinel Event Alert #63 Optimizing smart infusion pump safety with DERS.** This Sentinel Event Alert describes actions health care organizations can take to reduce the risk of errors caused by the misuse of smart infusion pumps, especially errors that can be avoided by the optimal use of DERS. The alert is directed to clinicians using smart infusion pumps in all health care settings, especially nurses, physicians, pharmacists and anesthesia providers, and including clinical leadership, biomedical engineers, and patient safety and risk officers.

  LINK: https://www.jointcommission.org/resources/patient-safety-topics/sentinel-event/sentinel-event-alert-newsletters/sentinel-event-alert-63-optimizing-smart-infusion-pump-safety-with-ders/

- **ISMP Guidelines for Optimizing Safe Implementation and Use of Smart Infusion Pumps.** Updated guidelines based on a national summit held in 2018 to discuss issues raised by errors reported to the ISMP National Medication Errors Reporting Program (ISMP MERP) and published in the literature since the 2009 guidelines. The newly revised and expanded The guidelines address, infrastructure, drug libraries, continuous quality improvement (CQI) data, clinical workflow, and interoperability with the electronic health record (EHR).

  LINK: https://www.ismp.org/guidelines/safe-implementation-and-use-smart-pumps

- **Reference Publications**

  - DeLaurentis P, Walroth TA, Fritschle AC, Yu D, Hong JE, Yih Y, Fuller J. Stakeholder Perceptions of Smart Infusion Pumps and Drug Library Updates: A Multi-site, Interdisciplinary Study. Am J Health-Syst Pharm 2019 Sept 1;76(17):1281-7.

  - Marwitz KK, Fritschle AC, Trivedi V, Covert ML, Walroth TA, DeLaurentis P, Saunders T, Walleser N, Fuller J, Degnan D. Investigating Multiple Sources of Data for Smart Infusion Pump-Electronic Health Record Interoperability. Am J Health-Syst Pharm 2020 Aug;77(17):1417-23.

  - Walroth TA, Smallwood S, Arthur K, Vance B, Washington A, Staublin T, Haslar T, Reddan JG, Fuller J. Development of a Standardized, City-wide Process for Managing Smart Pump Drug Libraries. Am J Health-Syst Pharm 2018 Jun 15;75(12):893-900.

Updated: August 31, 2021