ISMP's Guidelines for *Standard Order Sets*

Well-designed standard order sets–both electronic and paper formats–have the potential to:

- Integrate and coordinate care by communicating best practices through multiple disciplines, levels of care, and services
- Modify practice through evidence-based care
- Reduce variation and unintentional oversight through standardized formatting and clear presentation of orders
- Enhance workflow with pertinent instructions that are easily understood, intuitively organized, and suitable for direct application to current information-management systems
- Reduce the potential for medication errors through integrated safety alerts and reminders
- Reduce unnecessary calls to physicians for clarifications and questions about orders.

However, if standard order sets are not carefully designed, reviewed, and maintained to reflect best practices and ensure clear communication, they may actually contribute to errors.

The ***ISMP Guidelines for Standard Order Sets*** has been developed to help organizations ensure that the elements of safe order communication have been followed when designing paper-based or electronic order sets. The guidelines focus primarily on medication orders within order sets but also cover general aspects related to the design, approval, and maintenance of all standard order sets. ISMP recommends using this checklist to guide the design and evaluation of standard order sets before granting approval for use.

Format

Layout and directions for use

☐ Follows an official standard format that has been approved by an appropriate interdisciplinary committee (e.g., pharmacy and therapeutics committee, safety committee, forms committee)

☐ Identifies the order set name at the top of the form/screen and, as appropriate, specifies the targeted patient population (e.g., adult, pediatric, neonatal, adult oncology)

☐ Differentiates similar order sets employed for similar conditions (e.g., different heparin order sets based on various clinical conditions)

☐ Includes directions for completing the order set at the top of the form/screen

☐ Uses a standard method (e.g., check boxes, circling) for prescribers to activate/select desired orders that minimizes confusion regarding how inactivated/unselected orders are to be interpreted (e.g., yes/no check boxes may be problematic regarding correct interpretation if the physician checks neither the yes nor no option; with paper order sets, a single box to check–activate–an order may be less error-prone)

☐ Separates orders into logical groupings of treatment, procedure, and medication orders

☐ Uses separate lines/entries for each medication order; multiple orders do not appear on one line or within a single entry

☐ Includes the name of the drug and dose/strength on the same line/entry

☐ Avoids listing products with look-alike names near each other

☐ Lists the most common or preferred drug, strength, and dose first, if multiple drugs, strengths, and doses are available from which to choose

☐ Uses "OR" to indicate when choices between products must be made and includes specific guidance regarding that choice

☐ Provides adequate space between the medication name and dose (e.g., "propranolol 20 mg, not propranolol20 mg, which may look like 120 mg), and between the numerical dose and unit of measure (e.g., 3 units, not 3Units, which can look like 30 units)

☐ Provides adequate space between numbers used to sequence orders and the actual orders themselves (to prevent misinterpretation of the number as part of the order, such as a medication dose)

☐ Adheres to a consistent facility template regarding placement and format of prompts for documenting the date and time of the order, including how the date (e.g., month, day, year) and time (e.g., 24-hour clock) should be documented/displayed

☐ Includes an identification/tracking number and date of approval/revision (and signature of chairperson from approving committee/team if required by the organization)

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Font style and type

☐ Uses an easy-to-read, standard 12-point sans serif font such as Arial

Prompts for patient information

☐ Provides prompts in a designated standard location (top of the form preferred) to gather and document patient information

Includes Prompts For:

☐ Patient allergies (including food allergies) and associated reaction in a format where the allergy and reaction appear next to one another

☐ Metric measurements of patient height (in cm only) and weight (in kg only [or grams for low-birth-weight infants])

☐ The patient's diagnosis, significant comorbid conditions (may use check boxes for common, significant comorbid conditions such as diabetes, hypertension, renal impairment, liver disease, psychiatric conditions), and pregnancy/lactation status

☐ Patient demographic information (name, date of birth/age, gender, identification number)

Use of symbols, abbreviations, dose designations, punctuation

☐ Uses tall man lettering in a consistent format for medication names on the organization's list of look- and sound-alike drug names and those on the *FDA and ISMP Lists of Look-Alike Drug Name Sets With Recommended Tall Man Letters* (www.ismp.org/tools/tallmanletters.pdf), as appropriate

Orders Include:

☐ Leading zeros (e.g., 0.1 mg) when expressing medication doses (or other numerical values, as appropriate)

☐ Commas when expressing whole numbers greater than 999 (e.g., 1,000 units; 1,000 mg)

☐ Very large doses expressed using the word "million" and "thousand" instead of multiple zeros (e.g., 1 million vs. 1,000,000)

Orders Exclude:

☐ "Coined names" for preparations (e.g., Banana Bag, Magic Mouthwash)

☐ Outdated terminology (e.g., "heparin lock flush" for saline locks)

☐ Trailing zeros (e.g., 1.0 mg) when expressing medication doses (or other numerical values, as appropriate)

☐ Error-prone abbreviations (e.g., U for units, QD for daily, ml instead of mL), including those on the organization's "Do Not Use" list and on the *ISMP List of Error-Prone Abbreviations, Symbols, and Dose Designations* at: www.ismp.org/Tools/errorproneabbreviations.pdf

☐ Drug name abbreviations (e.g., ASA, MTX, PCN, MSO_4), drug name stems (e.g., vanco), and undefined drug protocol acronyms (e.g., using "CHOP" without defining the protocol [cyclophosphamide, **DOXO**rubicin, vin**CRIS**tine, predni**SONE**] at least once on the standard order set)

☐ Apothecary system designations (e.g., grains, drams, minims) or household measurement (e.g., teaspoon) as dosage strengths

☐ Fractions when expressing doses (e.g., 1/4 can look like 11, 14, or 114); however, fractions used to express the number of tablets should appear in the font used for fractions (i.e., ½), with a redundant statement in parentheses (one-half)

☐ Medication orders that list the dose first, before the drug name (dose could be confused with any numbering system used to sequence orders)

Content

Content development

☐ Develops order set by gaining consensus among all prescribers who treat the condition/targeted patients regarding best clinical management to create a single order set; **excludes** single practitioner-specific or single group-specific order set (unless only one practitioner/group provides care to patients with the specified condition)

☐ Complies with hospital policies and procedures (e.g., when to use an infusion pump, medication reconciliation policies)

☐ Excludes typos or spelling errors (spelling of all drug names have been verified)

Content of medication orders

Orders Include:

☐ Drug name (generic name, followed by brand name when appropriate)

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☐ Metric dose/strength

- ☐ Objective, organization-determined measures are associated with medication doses that vary based on the degree of the presenting symptom (e.g., morphine 2 mg IV every 3 hours for severe pain; morphine 1 mg IV every 3 hours for moderate pain)
- ☐ Criteria for dosing adjustments due to renal impairment or age, and/or an order to consult pharmacy to make necessary dosing adjustments

☐ Frequency (and duration if appropriate)

☐ Route of administration

☐ Indication (or a prompt/column for the prescriber to specify the indication)

☐ Types, frequency, and details regarding necessary patient assessments, as appropriate (e.g., blood pressure, neurological assessment, quality and rate of respirations, pulse oximetry) to monitor the effects of therapy

☐ Drug administration precautions

☐ Specific drugs to discontinue during therapy (e.g., enoxaparin when initiating IV heparin; insulin if enteral feedings are being held)

☐ Instructions to address known potential emergencies (e.g., antidote available, when to administer the antidote or call the prescriber)

Orders Exclude:

☐ Doses prescribed only by volume, number of tablets, number of vials/ampuls, etc. (exceptions include eye and ear drops, creams and ointments, liquid multivitamins)

☐ Range orders without objective measures to determine the correct dose

☐ Nonformulary medications or drugs withdrawn from the market

☐ Drugs for which a therapeutic substitution has been approved

☐ Medication devices no longer available in the organization (e.g., syringe pump)

☐ Organization-prohibited orders and ambiguous blanket orders such as "take home meds" or "resume pre-op medications"

☐ Exhaustive variety of analgesics, antiemetics, laxatives, antacids, bedtime sedative, antidiarrheal, and other medications by various routes to cover every possible scenario

☐ "If...then" orders that inappropriately shift responsibility from the prescriber to the nurse or pharmacist to determine whether the order should be activated (e.g., give RhoGAM if indicated; if patient has condition "x" begin low-molecular-weight heparin; begin vancomycin if okay with infectious disease practitioner); orders are acceptable if the specific parameters are within the scope of practice and control of the pharmacist or nurse (e.g., begin the antibiotic after obtaining three blood cultures)

☐ Overlapping parameters to guide medication administration that make it difficult to interpret the correct directions (e.g., give "x" units of insulin for a blood sugar of 150-200 and "x" units of insulin for a blood sugar of 200-250)

☐ Contraindicated or potentially dangerous combinations of drugs (e.g., IV morphine and epidural **HYDRO**morphone/bupivacaine on the same order set, with boxes that allow both orders to be activated; drugs with known drug interactions)

☐ Medication typically contraindicated in the targeted population (e.g., aspirin on pediatric order sets)

Approval and Maintenance

Approval

☐ Identifies a champion of the order set (e.g., physician, nurse, or pharmacist) to help facilitate review by the end users of the order set

☐ Considers any changes in drugs of choice and new devices since initial design or approval

☐ Identifies and includes representatives in the review process from all areas that will use the order set (including remote facilities in multi-system organizations)

☐ Makes substantiating documentation (e.g., clinical trial data, benchmarking data, national guidelines, prescribing information, professional standards, regulatory and accreditation standards) available to the reviewing committee/team and records the references in the minutes of the meeting(s) during which discussions take place

☐ Conducts a verification process to ensure that all medications comply with recommended dosing based on current evidence-based literature

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☐ Captures and shares comments from reviewers during the review process with the committee/team responsible for approval, and incorporates comments into the order set as appropriate

☐ Ensures approval of the order set by a standing interdisciplinary committee/team composed of physicians, nurses, pharmacists, and other allied health representatives (e.g., information services, respiratory therapy, dietary) who might use, carry out, or maintain the order set

☐ Establishes a plan to communicate significant changes in the order set to all who will/could be using it regularly

Orders Exclude:

☐ Nonformulary medications

☐ Drugs withdrawn from the market

☐ Drugs with a new boxed warning that has not been addressed

☐ Equipment no longer available in the organization

Maintenance

☐ Schedules at least a biannual review of the order set to ensure that no more than 2 years have lapsed since last approval; some order sets may require more frequent evaluation and reapproval

☐ Removes older version of the order set from use or access; provides or makes accessible the newer version to all affected areas (ideally online)

☐ Implements plan to communicate significant changes in the order set to all who will/could be using it regularly

Specific Criteria

For IV/epidural solutions/medications

☐ Expresses IV/epidural doses in a manner that matches possible programming choices with infusion pumps (e.g., smart infusion pumps, patient-controlled analgesia pumps)

☐ Expresses rates of infusion per hour or per minute; avoids infusion rates that require unnecessary calculations (e.g., 600 mL over 8 hours vs. 75 mL/hour)

For electrolytes and compounded products

☐ Expresses electrolyte doses and additives to IV compounded products in a manner that matches the pharmacy and/or compounder order entry system

For doses that include fractional amounts

☐ Uses rounded medication doses whenever clinically feasible according to the organization's policies (e.g., doses of chemotherapy greater than 10 mg rounded to whole number doses; very small doses rounded to an amount that can be accurately measured and/or dispensed)

For chemotherapy orders

☐ Uses an approved, single, standardized format for all order sets

☐ Includes prompts at the top of the form/screen for the patient's body surface area (BSA) based on current weight and height (and the date the BSA was calculated along with prompts for updated calculation of BSA, when appropriate)

☐ Includes frequency of reweighing patient for calculation of proper dose

Orders Include (or provides prompts for):

☐ Defined regimen/protocol acronym and protocol number

☐ Indication

☐ Cycle number (e.g., prompt for cycle # ___ of ___, or cycle # 5 of 6)

☐ Individual single daily doses in mg/m^2 or area under the curve (AUC) where appropriate and the final calculated dose in mg (or other dosing units) to be administered

☐ Actual dates of administration for all days in course of therapy

Orders Exclude:

☐ Total course dose

☐ Span of days for administration of a course of therapy, especially when a hyphen is used to express the days of therapy (e.g., days 1-4)

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For analgesics

☐ Verifies that daily doses of all prescribed analgesics do not exceed safe maximum doses if administered as frequently as prescribed; for example, acetaminophen doses do not allow more than 3 to 4 grams per day (by frequency of individual products or in combination with other products); total doses of all opioids limit the potential for toxicity if each is given as often as prescribed

☐ Excludes potentially dangerous combinations of analgesics (e.g., IV morphine and epidural **HYDRO**morphone/bupivacaine on the same order set, with boxes that allow both orders to be activated)

For pediatric medications dosed according to weight

☐ Includes the mg/kg dose (or mg/kg/hour, mcg/kg/min, or similar weight-based dosing formula) and the total calculated dose or a prompt for the prescriber to calculate and enter the total dose

☐ Includes frequency of reweighing patient for calculation of proper dose

For all medications dosed according to weight

☐ Includes frequency of reweighing patient for calculation of proper dose

For medications intended for patient's older than 65 years of age

☐ Excludes potentially inappropriate medications for this population (e.g., Beers criteria)

For paper-based preprinted order sets

☐ Provides online access of order sets to print in small quantities to avoid making repeated copies from existing copies

☐ Limits the number of copies on clinical units to a 1-month supply to ensure that older order sets are not used after revision; for online order sets, copies are not printed before needed and stored on clinical units

☐ Includes page numbers (e.g., page 1 of 2)

Orders Include:

☐ A prompt for prescriber's signature, printed name, and beeper or phone number (and ID number, if required) which is consistent with the standard format

☐ Sufficient space to clearly activate desired orders (e.g., adequate space between check boxes to prevent intended check mark from marking more than one box; between orders that must be circled to activate)

☐ Sufficient space above, below, and between "fill in" prompts to prevent crowding of entries and avoid stray marks from interfering with other "fill in" prompts

Orders Exclude:

☐ Lines on the back copies of order forms if carbonless (NCR-no carbon required) paper forms are used (NCR forms are not recommended if orders are faxed or scanned to pharmacy; order copies may pick up inadvertent marks and are not as clear as the original order set)

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