

ASHP Guidelines on Remote Medication Order Processing

Purpose

Because of the complexity of the care that pharmacists provide patients, the American Society of Health-System Pharmacists (ASHP) advocates that patients have 24-hour access to the pharmacist responsible for their care and that the pharmacist be physically accessible to the patient when feasible. ASHP recognizes that such access is not always possible and encourages the development of remotely delivered pharmacist care as a supplement to onsite care.

Medication order review is one aspect of pharmacist patient care. All health-system pharmacies have an obligation to provide a review of medication orders that ensures safe medication use.¹ When onsite pharmacist review is not available, health systems may determine that remote pharmacist review of medication orders is a suitable alternative. The purpose of these guidelines is to describe the policies and procedures that must be in place to safely employ remote medication order processing (RMOP). Health-system policies and procedures regarding RMOP should address quality assurance and safety; access to drug information and hospital policy resources; training and orientation; minimum technical standards and specifications; confidentiality, privacy, and security; regulatory and accreditation standards; and communication and problem resolution. These guidelines also describe some general considerations for RMOP implementation, and Appendix A provides a checklist for assessing implementation readiness. Appendix B contains an outline of a model agreement for RMOP. A glossary of terms used in these guidelines appears in Appendix C.

Because of the rapid pace of change, differences in practice settings and RMOP models, and the complexities of health care organizational arrangements, aspects of these guidelines may not be applicable to all settings. These guidelines are not intended to describe best practices for the operational relationships between satellite and central pharmacies in acute care settings. Readers should also note that these guidelines do not attempt to address all aspects of remotely delivered pharmacist care and should interpret them as limited to the subject of RMOP. These guidelines address remote order verification only when medication order fulfillment occurs through automated medication storage and distribution devices. Remote end verification of the dispensed drug product (e.g., visual approval of the drug product by video camera or other means) is beyond the scope of these guidelines. Health-system administrators and pharmacy managers should therefore exercise their professional judgment in assessing and adapting these guidelines to meet the needs of their particular settings and to comply with the health care organization's policies and procedures.

Models of RMOP Services

The technologies used in RMOP are relatively new and rapidly changing, so different methods for RMOP have evolved, and further evolution should be encouraged. At least two models of RMOP are currently in use: contracted

services and supplemental workload balancing, which includes network workload balancing and on-call assistance. Each of these models has unique characteristics that must be considered in planning for its use.

Contracted Services. In this model, a hospital pharmacy that is not continuously open contracts with a larger hospital or a service to provide RMOP when its pharmacy is closed. This model is typically applied when a hospital without 24-hour pharmacy services has sufficient automated dispensing cabinet capacity that RMOP allows nursing staff to keep functioning without having a pharmacist present,² although some institutions have developed models for remote verification by pharmacists of dispensing performed by pharmacy technicians at the client site.³

Supplemental Workload Balancing. Similar to the model described above, in this case a health system with a number of hospitals relies on the ones that have a 24-hour pharmacy department or on a service to provide RMOP for hospitals whose pharmacies are closed or that experience unanticipated peaks in order processing workload. For example, in an on-call model, a staff pharmacist from the client site or a contracted service is placed on call to help with managing workload. This pharmacist works remotely (sometimes from a home office, where allowed by state regulation) to help the client's pharmacy department manage unanticipated peaks in order processing workload (often on the second or third shift). In this model, the remote pharmacist is responsible for medication order entry and/or review, and medication order fulfillment occurs through the client-site pharmacy.

Quality Assurance and Safety

Medication-use management and safety in the RMOP environment require special efforts in the coordination of quality-assurance, quality-improvement, and patient safety practices between the client site and the remote site. Differences in local practice standards and organizational cultures, combined with unique human factors issues, have the potential to magnify the risk of errors. Quality, safety, and risk management strategies should be jointly examined and agreed on and should address the procedures and communication pathways unique to RMOP systems. These include critical workflow steps and handoffs involved in medication ordering, review, and verification; communication among prescriber, pharmacist, and nurse; and assessing the patient's response to drug therapy and achieving desired therapeutic outcomes.

Review of the Patient's Profile. The remote pharmacist must be able to review the patient's profile for

- Medication history and medication reconciliation reports,
- Diagnosis,
- Allergies and prior adverse drug reactions,

- Height, weight, age (measured versus estimated), and sex,
- Pregnancy status for women of childbearing potential,
- Duplications of drug therapies,
- Potential drug interactions,
- Pertinent laboratory data, and
- Other information as needed.

Clarification of Medication Orders. The remote pharmacist must have a process by which he or she can clarify the medication order with the prescriber. The remote pharmacist must alert other health care providers caring for the patient (e.g., the client nursing and pharmacy staff) of the need for additional review and clarification. There must be a mechanism for the remote pharmacist to readily communicate by phone or leave a note in the patient profile for other health care providers, including the client site pharmacy staff, to clarify the order or otherwise respond within an appropriate period of time. The remote pharmacy must have a mechanism for timely follow-up on medication orders that are pending clarification.

Quality-Assurance and Medication Error Reporting Systems. The remote pharmacy must participate in the client site's quality-assurance and medication error reporting systems. These systems should include the collection and reporting of medication errors and process variances as described below:

- The medication error reporting system should include potential adverse events that reach the patient (with or without harm) and potential adverse events that are intercepted before reaching the patient.
- Medication error reports related to RMOP procedures and communications should be tracked by outcome, type, cause, severity, preventability, and source.
- Corrective action plans should be directed toward the system failures that contributed to or caused the error, variance, or adverse event.
- Policies and procedures should ensure that quality-assurance data and medication error reports are jointly reviewed in a timely manner by pharmacy leadership and safety officers (if applicable) at both the client and remote sites and that relevant information is shared with relevant frontline practitioners at both sites, including remote pharmacists and client-site nursing and pharmacy staff.

The quality-assurance program should include indicators that measure important aspects of RMOP, including measures of (1) timeliness (e.g., elapsed time to receive and verify an order), (2) system performance (e.g., percentage of time information technology systems are not available for RMOP), (3) compliance with contractual requirements, (4) employee satisfaction at the client and remote sites, and (5) unanticipated problems (e.g., breaks in privacy standards, communication and handoff problems).

Handoff Communication. The remote site should have a documented process for handoff communication that meets the requirements of Joint Commission National Patient Safety Goals.⁴

Access to Drug Information and Hospital Policy Resources

Drug Information Resources. Drug information resources are essential tools for health care organizations. Drug information resources, specific to the needs and scope of patients served, are essential for practicing evidence-based medicine in a safe and efficient manner. In health care systems that use RMOP procedures, each institution needs point-of-care access to internal and external drug information systems. Internal drug information resources include the client's formulary, laboratory reference values, newsletters, and drug-use guidelines based on local standards. External drug information resources include commercially available electronic and print media that organize information into full-text and bibliographic retrieval systems.

Drug information resources available in the remote pharmacy should at a minimum meet the state board of pharmacy requirements for both the client and remote pharmacy sites and include the current edition of a drug information reference (hard copy or electronic). Other reference material (hard copy or electronic media) should be available, depending on the scope of care being provided. Recommended clinical and drug information reference materials available in the remote pharmacy include

- Two sources of pediatric dosing information (ideally, one of which is the same resource used by clinicians in the remote pharmacy),
- Internet access to online drug information resources, including the Food and Drug Administration,
- Drug compatibility and drug interaction resources,
- Poison information and poison control resources (at a minimum, the telephone number for a certified poison control center), and
- Drug information center contact number.

Drug information requirements, resources, and staff competencies in the use of drug information systems should be reviewed at least annually to ensure that patient care needs are met.

Hospital Policy and Procedures. The minimum information on client site hospital policies and procedures that the remote pharmacist should have available is

- Client site's pharmacy department's policies and procedures,
- Client site's formulary,
- Client site's relevant nursing department policies and procedures,
- Standard medication administration times,
- Standard drip concentrations or drug protocols,
- High-risk policies including the "Do Not Use" abbreviations list,
- Drug-specific clinical guidelines,
- Restrictions by indication or prescriber,
- Chemotherapy protocols, pain protocols, and anticoagulation protocols,
- Standing or protocol orders,

- Pre- and postoperative antibiotic selection and administration protocols, and other protocols as determined,
- Therapeutic interchange list,
- Client's policies and procedures for processing non-formulary medication orders,
- Client's policies and procedures for handling a clinical message order to alert nursing staff and pharmacy department of the need to address an issue at a future time, and
- Client's pharmacokinetic and renal dosing policies along with written medical staff approval to write orders in the patient's chart if required to comply with these policies.

The remote site must have a procedure that ensures the timely and complete communication of changes in client site hospital policies and procedures, including changes to formularies and medication protocols.

Training and Orientation

Pharmacists, through training and orientation, are competent to review and enter medication orders written by prescribers into a computerized database to maintain a complete patient profile. This patient profile can be used by nurses and other providers to access medications appropriate for their patients. This training and orientation are critical for pharmacists to accurately document and transcribe the appropriate information to maintain an accurate and up-to-date profile. Requirements for training and orientation include the following:

- All education and orientation are documented in a permanent record maintained in the pharmacy department of the remote site (if applicable) and shared with client sites or in the pharmacy department of the client site, as appropriate.
- All pharmacy personnel accessing the pharmacy information system are tested for competency prior to use of the system and annually thereafter.
- When upgrades or significant changes are made to the client site's computer system, the client site will communicate to the remote site the need for follow-up training.
- When significant changes are made to the client site's clinical policies or procedures, the client site will communicate to the remote site the need for follow-up training.
- The client and the remote site must have a process for documenting the remote pharmacist's competencies. If the remote site is responsible for the documentation of those competencies, the client and the remote site must have a system for reporting those competencies to the client.

Minimum Technical Standards and Specifications

The client and the remote site must ensure that the following minimum technical standards and specifications are met:

- The remote site must have access to the client's network or Internet, phone, and scan or fax access to the client.

- The remote site must have the ability to access the client facility via the client's Internet solution or via the client's computer network.
- The remote site must, to the extent possible, have redundant systems in place to ensure RMOP service availability (e.g., computer network and Internet connectivity, other information systems used to facilitate RMOP).
- The remote site must have the ability to operate remotely the client's order transmittal system.
- The systems used by the remote pharmacist to view the patient orders and other medical information must comply with the technical standards set by the Health Insurance Portability and Accountability Act of 1996 and ensure technical and physical safeguarding of patient health care information.

Confidentiality, Privacy, and Security

To ensure the confidentiality, privacy, and security of patient health care information, the following conditions must be met:

- Remote pharmacists must adhere to the client's confidentiality policy.
- The remote site, if a business entity, must have a signed business associate agreement with the client.
- The client must provide individual pharmacist-specific access to the client's hospital computer system.

Regulatory Considerations

State regulation of RMOP varies considerably. The client and the remote site should jointly analyze state regulations governing pharmacy practice at both sites to determine and meet applicable requirements. This analysis should be repeated on a routine basis, as regulations may change. To ensure regulatory compliance, at a minimum the following should be verified and approved by the client and the remote site before implementing RMOP:

- Remote site's approval to operate by the client's state board of pharmacy, if required,
- The policy and procedure manual for the RMOP operation, including but not limited to procedures for handling computer system or connectivity downtime, issue escalation, annual competency renewal verification, and communication between the client site and remote site personnel,
- Copies of all licensure required by the states in which the client and the remote site are located (some states require remote pharmacists to have a consultant license in addition to a state pharmacist license for each hospital for which the pharmacist performs RMOP services), and
- Copies of any hospital job-specific competency requirements for pharmacy personnel.

Communication and Problem Resolution

To ensure the safety of the RMOP service, the client and the remote site must establish effective communication chan-

nels between personnel at the two sites. Communication among prescriber, pharmacist, and nurse will be critical to assessing the patient's response to drug therapy and achieving desired therapeutic outcomes. The remote pharmacist must have the ability to immediately contact the prescriber or client site's nursing staff to discuss any concerns identified during review of the patient's information. The client must provide its nursing supervisor with a 24-hour telephone number to contact the remote site or remote pharmacist and encourage nurses to communicate with the remote pharmacist. In the event the nursing supervisor is unable to resolve a problem or concern, the client pharmacist on call is available for consultation and problem resolution if the problem cannot wait until the client pharmacist is on duty again. Patient profile information, including laboratory results, should be communicated to the remote site electronically; oral communication of laboratory results should be limited to exceptional circumstances, and such oral communications should be documented in the patient medical record as soon as possible. Downtime procedures should provide mechanisms for direct communication among the remote pharmacist, nurses, and the prescriber.

Considerations for Implementation

The success of RMOP implementation will depend on a host of specific factors. Below are some considerations that are generally applicable. Appendix A provides a brief checklist for implementation readiness.

- Terms of the contract or agreement should allow flexibility for the number of orders processed, since estimates prior to “go-live” may be inaccurate.
- Early and frequent communication between the client site and the remote site, especially in the first few weeks after go-live, is critical to the success of the implementation and ongoing operation.
- After-hours technical support at both the remote site and the client site will be essential to the success of the implementation and ongoing operation. Plan for information technology support in advance of go-live.
- Education will be required for all nurses at the client site, not just those whose shifts coincide with RMOP coverage. In particular, changes to the client site's override processes will need to be planned in collaboration with nurses.
- The client should implement a mechanism for communication between the remote site and nursing via the electronic medication administration record (eMAR) system. For example, if the remote pharmacist reviews the patient's home medication reconciliation list and identifies items not stocked by the pharmacy, it would be helpful to have a drug dictionary item (e.g., “Pharmacy Note to Nurse”) whereby the remote pharmacist can make an entry in the eMAR that informs nurses that the remote pharmacist has reviewed the order but that some action at the client site is required.

Conclusion

ASHP believes that patients should have 24-hour access to the pharmacist responsible for their care and that the pharmacist should be physically accessible to the patient

when feasible. Because 24-hour pharmacy services are not achievable in all circumstances, health systems may employ remote pharmacist review and processing of medication orders. The purpose of these guidelines is to describe the policies and procedures that must be in place to safely employ RMOP. Health-system policies and procedures regarding RMOP should address quality assurance and safety; access to drug information and hospital policy resources; training and orientation; minimum technical standards and specifications; confidentiality, privacy, and security; regulatory and accreditation standards; and communication and problem resolution. Given the rapid pace of change in technology, differences in practice settings and RMOP models, and the complexities of health care organizational arrangements, health-system administrators and pharmacy managers should exercise their professional judgment in assessing and adapting these guidelines to their particular settings.

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3. Clifton GD, Byer H, Heaton K et al. Provision of pharmacy services to underserved populations via remote dispensing and two-way videoconferencing. *Am J Health-Syst Pharm.* 2003; 60:2577-82.
4. The Joint Commission. 2009 National Patient Safety Goals: hospital program. www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/09_hap_npsgs.htm. (accessed 2009 Dec 28).

Appendix A—Checklist/Assessment for Implementation Readiness

1. All automation has been tested and is functional, including
 - a. Communication of medication orders (fax machines or scanners)
 - b. Computer systems maintaining patient profiles
 - c. Connectivity to automated medication dispensing cabinets
 - d. Electronic reference resources
 - e. Remote connectivity
2. All personnel training for remote site and client site is completed and documented:
 - a. Computer systems
 - b. Clinical guidelines
 - c. Client site pharmacy policies and procedures related to review, authorization, and entry of medication orders
 - d. Communication procedures
3. Pre-go-live test of mock patients and scenarios has been performed for
 - a. Fax/scan orders
 - b. Admission, transfer, and discharge of patient

- c. Medication order entry
 - d. Communication procedures
4. System downtime protocols have been well communicated to all applicable personnel at both the remote site and client site (e.g., pharmacy, nursing, information technology, and administrative personnel)
 5. Go-live date and service level expectations have been well communicated to all applicable personnel at both the remote site and client site
 6. Communication process that includes quality reporting, system changes/availability, and policy and procedure updates as well as shift change communication has been agreed on, established, and well communicated to all applicable personnel at both the remote site and client site

Appendix B—Outline for Model Agreement Between Remote Site and Client

The agreements between a remote site and the client must be approved by both contract office and risk management in both facilities (if applicable). The agreement should include

1. Services to be provided, including the roles of both parties:
 - a. Hours of service
 - b. Technology requirements
 - c. Order processing services
 - d. All clinical services provided
 - e. Management services
 - f. Quality measures
 - g. Other services (e.g., vacation, emergency, or other hours of coverage)
 - h. Qualification of pharmacy and pharmacists
 - i. Security of information
 - j. Limitations
 - k. Access to records, including information required to review patient profiles
2. Terms and renewal of the agreement
3. Mutual indemnification and insurance
4. Termination of the agreement, including changes in laws or regulations
5. Confidentiality, including requirements set by the Health Insurance Portability and Accountability Act of 1996
6. Limitations of liability
7. No exclusion from federal health care programs
8. Dispute resolution
9. Fees and payment terms:
 - a. Hourly rates
 - b. Per-order rates
 - c. Order volume
 - d. Overpayment and underpayment exposure
 - e. Penalty charges
 - f. Addition of new services
10. Miscellaneous issues, including
 - a. Independent contractors
 - b. Notices
 - c. Compliance with the terms
 - d. Rights of the parties
 - e. Conflict of laws

- f. Compliance with laws, regulations, guidelines, and accrediting body standards (e.g., Joint Commission)

Appendix C—Glossary

Terms used to describe remote medication order processing (RMOP) practices are evolving and vary considerably. Readers should be alert to these inconsistencies and exercise caution in interpreting the literature. The following terms are used in these guidelines:

Client: The health care organization receiving the RMOP service.

Client Site: The site receiving the RMOP service (the site where the patient is receiving care).

RMOP: Medication order processing provided by a remote pharmacist; this term includes remote order entry and remote order review.

Remote Pharmacist: A licensed pharmacist processing the medication order from the remote site.

Remote Site: The site that is electronically linked to the client site via a computer system and/or a video or auditory communication system approved by the appropriate state board(s) of pharmacy. The remote site may be a licensed pharmacy or other location permitted by the appropriate state board(s) of pharmacy.

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