10.22088/caspjrm.12.2.1

Caspian J Reprod Med, 2026, 12 (2): 1-3

Caspian Journal of Reproductive Medicine

Journal homepage: www.caspjrm.ir

Editorial

From adherence to medication safety: Rethinking self-administered ovarian stimulation in IVF/ICSI care

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Received: 4 Sep 2026 Accepted: 28 Sep 2026

Abstract

Infertility affects approximately one in six people worldwide, making medication safety an essential component of high-quality fertility care. During IVF/ICSI, ovarian stimulation is largely managed at home, requiring patients to prepare, dose, store, and administer individualized medications, often following brief instruction. Available evidence suggests that medication related difficulties may be more common than clinicians recognize, involving dosing, communication, dispensing, and injection device use. Importantly, medication adherence should not be equated with medication safety. A safer approach requires ongoing education, demonstration and teach-back, accessible professional support, and confidential, nonpunitive reporting of medication errors and near misses. Reframing self-administered ovarian stimulation as a system-level medication safety issue may help identify preventable risks, strengthen treatment support, and reduce avoidable disruptions to fertility care.

Keywords: Communication, Counseling, Infertility, Medication Adherence, Ovulation Induction

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[DOI: 10.22088/caspjrm.12.2.1]

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Caspian Reprod Med

Editorial

Infertility affects approximately one in six people worldwide, highlighting the need not only to expand access to fertility treatment but also to ensure that treatment is delivered safely (1). In vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) require coordinated clinical and laboratory care, yet a substantial component of treatment takes place at home. During controlled ovarian stimulation, patients commonly prepare, store, and administer medications after receiving instructions from the clinical team. For many patients, this is their first experience managing a complex and individualized medication regimen. The transition from supervised clinical care to self-administration therefore deserves greater attention as a patient-safety issue.

Ovarian stimulation is not a simple fixed dose regimen. Medication doses and schedules may be adjusted according to ovarian response and monitoring findings. Patients must identify the correct medication, prepare and administer the prescribed dose accurately, use injection devices correctly, maintain appropriate storage conditions, and understand how to respond when treatment instructions change. Potential problems include missed or delayed doses, incorrect dose selection, preparation or administration errors, inappropriate storage, and uncertainty following dose adjustments. The final oocyte-maturation trigger warrants particular attention because its timing is closely linked to oocyte retrieval and therefore leaves little margin for error. Current European Society of Human Reproduction and Embryology (ESHRE) guidance emphasizes individualized ovarian stimulation, appropriate monitoring, and treatment safety, underscoring the importance of effective medication management throughout the stimulation process (2).

Yet how often do these problems actually occur? Available evidence suggests that they may be substantially under recognized. In a study of 488 patients from 28 infertility centers, 27% reported deviations from, or uncertainty about, their injection schedule or medication dose. Physicians reported considerably higher levels of adherence than patients themselves, while discrepancies in patients' understanding occurred in approximately one-fifth of cases, particularly regarding gonadotropin units and doses (3). These findings are important because problems that remain invisible to the clinical team cannot readily be corrected.

The challenges also extend beyond the patient–clinician relationship. A two-year audit of 1,269 fertility patients receiving gonadotropin prescriptions identified 150 patients who reported 391 pharmacy-related concerns involving medication dispensing, medical equipment or supplies, counseling and communication, and inventory or other issues (4). Human factors research provides another important perspective. In a usability study of follitropin alfa injection pens, the frequency of critical administration errors varied substantially across devices, ranging from 7% to 38%. Incorrect or inadequate priming and failure to verify the dose were among the most common errors (5). These findings suggest that medication errors cannot always be attributed to inadequate patient attention, knowledge, or motivation. Rather, the design of the medication-use system including the injection device, instructions, and surrounding workflow may influence whether correct administration is straightforward or unnecessarily difficult.

This distinction is important because medication adherence and medication safety are related but not interchangeable concepts. Adherence refers to the extent to which a patient's medication-taking behavior corresponds with an agreed treatment regimen. Medication safety is broader, encompassing the prevention of medication-related harm across the entire medication-use process, including prescribing, dispensing, storage, preparation, administration, monitoring, and communication. For example, a missed injection may reflect intentional non-adherence, but it may also result from forgetfulness, unclear instructions, an inadequately communicated dose change, dispensing delays, difficulties with the administration device, or limited access to professional guidance. Consequently, labeling every deviation from the prescribed regimen as "non-compliance" may obscure the underlying circumstances and contributing factors and can place disproportionate responsibility for medication-related problems on the patient.

This distinction has important practical implications. Medication education should be treated as an ongoing clinical process rather than a single pre-treatment session. Instructions should include a clear demonstration followed by supervised return-demonstration using the actual medication and administration device. Teach-back can be used to assess whether patients understand the purpose, dose, timing, preparation, and storage requirements of their medications (6). However, its effectiveness specifically for improving medication safety during ovarian stimulation remains insufficiently studied. Whenever treatment regimens change, patients should receive prompt, clear, and updated instructions, ideally in their preferred language and in a format that supports accurate medication use.

Patients need more than instructions; they need a reliable mechanism for obtaining help when problems arise or uncertainty persists. Telephone support, secure messaging, or another clearly defined escalation pathway can enable medication-related problems to be addressed before they compromise treatment. Nurses

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[DOI: 10.22088/caspjrm.12.2.1]

and pharmacists can contribute through medication reconciliation, injection-device training, storage counseling, and early identification of dispensing or communication problems. Digital reminders and instructional videos may complement these services, but should not be considered substitutes for professional support. In a multicenter randomized trial involving 153 women undergoing IVF, a web-based medication-management application did not reduce medication errors, medication surplus, or patient-initiated communication compared with conventional medication managemen (7). This does not imply that digital tools lack value; rather, it suggests that technology alone is unlikely to address a medication-safety problem that is inherently multifactorial.

Quality improvement should also extend beyond whether an IVF cycle is completed or cancelled. Fertility clinics could incorporate confidential, nonpunitive reporting of medication errors and near misses into existing patient-safety systems. Relevant outcomes should include not only cycle cancellation but also additional clinical contacts, medication waste, financial costs, treatment delays, patient anxiety, loss of confidence, and reproductive outcomes. Standardized definitions are also needed to distinguish intentional non-adherence from unintentional deviations, administration errors, dispensing problems, device-related errors, and near misses. Without consistent definitions and outcome measures, it will remain difficult to determine whether interventions genuinely improve medication safety or merely alter how errors are detected and reported.

Key research priorities include developing standardized methods to identify and classify medication errors during ovarian stimulation and comparing information obtained from patients, clinicians, pharmacies, and medical records. Interventions such as teach-back, return-demonstration, pharmacist- or nurse-led support, multilingual education, digital reminders, and simplified injection devices should be evaluated using patient-safety outcomes rather than adherence alone. Future studies should also determine whether reducing medication errors improves treatment continuity, patient experience, medication utilization and waste, and reproductive outcomes, particularly in resource-limited settings.

Self-administered ovarian stimulation is not simply a matter of whether patients adhere to instructions. It is a medication-use process involving patients, clinicians, pharmacists, administration devices, communication, and organizational practices. Reframing the issue from adherence to medication safety provides a broader foundation for prevention and quality improvement. Fertility clinics should therefore develop systems that make correct medication use understandable, achievable, supported, and safe. Treating medication safety as a measurable quality indicator also shifts the focus from patient responsibility alone toward shared responsibility across the healthcare system.

Conflicts of Interest

The author declares no conflict of interest.

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