

A Literature Review of Independent Double Checks

In the June edition we discussed the benefits of performing independent double checks to prevent drug errors. The authors of a recent literature review, published in the Australian BMJ Quality & Safety journal, concluded that the research does not support the double check process. The literature review, which included 13 studies, had several limitations:

- 10 out of 13 studies were rated a poor- or fair-quality study based on the National Institute of Health (NIH) criteria; many did not provide quality results
- Five of the studies included small study populations or low error rates
- Five studies were based completely or partly on self-reports or incident report data that measured medication errors; these are unreliable sources and can miss errors
- Only seven actually tested for an association between double checking and medication errors
- Of the three studies that were considered good-quality (based on the NIH criteria):
 - Only one study reported double checking compliance rates
 - Two studies found a positive association between double checking and a decrease in medication errors; one study found double checks to be more effective than the single check in detecting wrong vial errors
- Double checks detected more complex weight-based dosing errors compared to the single check, however the effect was not significant
- Six of the 13 studies assessed double-checking adherence rates but did not evaluate a link between double checking and medication administration errors thus the literature review could not properly determine the effectiveness of double checking
- Only three of the studies differentiated between independent and primed double checking
 - Independent double checking involves two people separately checking the components of the work, without knowing the results of the other
 - Primed double checking involves two people working together to check the process; this may bias the process and influence the checker on what they should find
 - Of the three studies, one only looked at double checking compliance rates
 - Two studies described the double check as independent and found a positive correlation between the independent double check and decreased medication error rates
 - None of the studies provided rates of medication errors comparing independent versus primed double checking
- Over 50% of the studies looked at double checks for all types of medications administered
 - A few studies investigated double checks for only selected high-alert medications
 - Only two studies tested selective double checking for the most vulnerable high-alert medications (i.e. subcutaneous insulin injections; high-risk drugs)
- None of the studies assessed patient harm

The authors of the literature review dispute the effectiveness of double checks due to several factors such as a lack of compliance with the double check itself, a hurried double check, or lack of a true independent double check. The seven studies that tested for an association showed a positive correlation between double checking and reduced medication errors. These seven studies were also not able to show that single checking resulted in fewer errors compared to double checking.

References

1. Institute for Safe Medication Practices. (2018). *Nurse Advise-ERR*. Retrieved from Institute for Safe Medication Practices: <http://www.ismp.org/newsletters/nursing/issues/NurseAdviseERR201910pdf>

None of the studies looked at patient harm and the authors speculate that double checks may not result in a significant decrease in harm, or prevent rare, catastrophic errors. This is based on the fact that there is a low proportion of medication errors that result in actual patient harm. Therefore, double checks should only be used for the most vulnerable high-alert medications.

The authors state that more high-quality research is needed in the following areas:

- Establish a clear link between independent double checks for select high-alert medications to fewer patient errors using methods other than self-reports of error rates or incident report data
- Assess the frequency and severity of errors identified and prevented during the double-checking process as well as potential and actual outcomes of errors
- Evaluate the details of the double-check process, in particular whether checks are performed independently and if all steps in the process are completed as required
- When and where double checking improves safety outcomes

While the authors concluded that double checks do not result in a reduction in medication errors, the quality of the studies was low, using weak methodologies. The use of independent double checks on high-alert medications is still recommended. Healthcare providers should assess their current double check systems to confirm they are designed for success.

References

1. Institute for Safe Medication Practices. (2018). *Nurse Advise-ERR*. Retrieved from Institute for Safe Medication Practices: <http://www.ismp.org/newsletters/nursing/issues/NurseAdviseERR201910pdf>