

**Meta-analysis to calculate risk ratio for a medication administration error following a double-check by a nurse (compared with no double-check)**

**Data extracted from literature**

<b>Study</b>	<b>DC_err</b>	<b>DC_no</b>	<b>SC_err</b>	<b>SC_no</b>
Kruse H, Johnson A, O'Connell D, Clarke T. Administering non-restricted medications in hospitals: the implications and cost of using two nurses. Australian Clinical Rev. 1992;12(77-83)	92	43336	120	40155
Douglass AM, Elder J, Watson R, Kallay T, Kirsh D, Robb WG et al. A randomized controlled trial on the effect of a double check on the detection of medication errors. Ann Emer Med. 2018;71(1):74-82 e1. doi:10.1016/j.annemergmed.2017.03.022 Weight-based error	14	7	20	2
Douglass AM, Elder J, Watson R, Kallay T, Kirsh D, Robb WG et al. A randomized controlled trial on the effect of a double check on the detection of medication errors. Ann Emer Med. 2018;71(1):74-82 e1. doi:10.1016/j.annemergmed.2017.03.022 Vial error	0	11	6	7
Modic MB, Albert NM, Sun Z. Does an insulin double-checking procedure improve patient safety? J Nurs Adm. 2016;46(3):154-60.	574	1419	1189	2054

**Variable names:**

DC\_error: number of doses given with a double check that contained an error

DC\_no: number of doses given with a double check that did not contain an error

SC\_error: number of doses given with a single check that contained an error

SC\_no: number of doses given with a single check that did not contain an error

## STATA v16.0 output

```
. meta esize DC_err DC_no SC_err SC_no, esize(lnratio)
```

### Study information

No. of studies: 4

Study label: Generic

Study size: \_meta\_studysize

Summary data: DC\_err DC\_no SC\_err SC\_no

### Effect size

Type: Inratio

Label: Log Risk-Ratio

Variable: \_meta\_es

Zero-cells adj.: 0.5, only0

### Precision

Std. Err.: \_meta\_se

CI: [\_meta\_cil, \_meta\_ciu]

CI level: 95%

### Model and method

Model: Random-effects

Method: REML

```
. meta summarize, random(reml)
```

Effect-size label: Log Risk-Ratio

Effect size: \_meta\_es

Std. Err.: \_meta\_se

Meta-analysis summary

Number of studies = 4

Random-effects model                      Heterogeneity:  
Method: REML                                      tau2 = 0.0000  
   I2 (%) = 0.00  
   H2 = 1.00

-----+-----				
Study	Log Risk-Ratio	[95% Conf. Interval]		% Weight
-----+-----				
Study 1	-0.341	-0.612	-0.070	8.01
Study 2	-0.310	-0.640	0.020	5.41
Study 3	-2.411	-5.182	0.360	0.08
Study 4	-0.241	-0.324	-0.159	86.51
-----+-----				
theta	-0.255	-0.332	-0.178	
-----+-----				

Test of theta = 0: z = -6.50                      Prob > |z| = 0.0000  
Test of homogeneity: Q = chi2(3) = 2.92                      Prob > Q = 0.4036

. meta summarize, random(reml) predinterval nostudies

Effect-size label: Log Risk-Ratio  
Effect size: \_meta\_es  
Std. Err.: \_meta\_se

Meta-analysis summary                      Number of studies = 4  
Random-effects model                      Heterogeneity:  
Method: REML                                      tau2 = 0.0000  
   I2 (%) = 0.00  
   H2 = 1.00

theta: Overall Log Risk-Ratio

	Estimate	Std. Err.	z	P> z	[95% Conf. Interval]	
theta	<b>-.2547498</b>	.039166	-6.50	0.000	-.3315137	-.1779858

95% prediction interval for theta: [-0.423,-0.086]

Test of homogeneity: Q = chi2(3) = 2.92                      Prob > Q = 0.4036