

Table S13									
Included observational studies; characteristics and outcomes (n = 16)									
	Study Design	Setting Hospital out-patient clinic Doctor's office Hospital out-patient clinic and doctor's office Emergency room Other, home visits	Intervention	Comparison CDSS = computerised clinical decision support system; EHR: electronic health record; E-Rx; electronic prescribing eGPP = electronically generated paper prescription	Process outcomes	Change in process outcomes in intended direction Change in process outcomes consistent with (↑) or non-consistent with (↓) intent of intervention W: significantly worsened B: significantly better NS: no significant differences or estimate or text	Patient outcomes	Change in patient outcome Change in patient outcomes consistent with (↑) or non-consistent with (↓) intent of intervention W: significantly worsened B: significantly better NS: no significant differences or estimate or text	Harms or risk of harms <i>á priori</i> specified AE reported Risks to patient safety reported
1	Astrand 2009	Ambulatory, not clear or not specified	e-prescribing	non e-prescribing	Number and frequencies of prescriptions where pharmacists needed	↓ RR of 1.7 in disfavor of e-prescribing			<i>á priori</i> specified-no AE reported-no

	prospective observational comparison				clarification from prescriber for incorrect or incomplete prescribing, adverse events risks and drug-drug interaction risks				Risks to patient safety reported-yes, main outcome. Faulty dosage and directions for use could have caused patient harm if not intercepted by pharmacist.
2	Bizovi 2002 non-controlled before and after Retrospective cohort	Emergency room	Computer generation of paper prescription	pre-intervention; handwritten prescriptions	Total potential adverse drug events (RR)	B			<i>á priori</i> specified-Yes: main outcome AE reported- no Risks to patient safety reported-Yes, faulty programming
3	Cafolla 2011 non-controlled before and after Retrospective cohort	ambulatory, not specified	CDSS in EHR System initiated computer dosing of oral anticoagulants	pre-intervention; no CDSS			% of time spent in therapeutic range major and minor bleeds and deaths thromboembolic complications	B NS NS	<i>á priori</i> specified-Yes: major and minor bleeds; thromboembolic complications AE reported- no Risks to patient safety reported-no
4	Devine 2010 non-controlled before and after Retrospective cohort	Doctor's office	CDSS alerts embedded in EHR with options for printing or faxing of prescriptions system initiated System initiated	pre-intervention; no CDSS alerts	prescribing errors severity of prescribing errors	B B	Adverse drug events	post intervention 0.1% (n=5) vs pre-intervention 0.2% (n=8)	<i>á priori</i> specified-yes, main outcome AE reported- Adverse drug events post intervention 0.1% (n=5) vs pre-intervention 0.2% (n=8) Risks to patient

									safety reported- Lower rates of all error types with CDSS
5	Ekedahl 2004 retrospective cross-sectional	Hospital out- patient clinic and doctor's office	e-prescribing	none			Patient primary non- compliance i.e. proportion of unclaimed e- prescriptions	Primary non-compliance: 2.3% Highest numbers of unclaimed e- Rxs were for respiratory, nervous system and musculo-skeletal system drugs.	<i>á priori</i> specified-no AE reported? no Risks to patient safety reported- yes, main outcome
6	Ginzburg 2009 non-controlled before and after retrospective cohort	Hospital out- patient clinic	CDSS in EHR system initiated Weight-based prescribing method pediatric acetaminophen or ibuprofen	pre-intervention; no CDSS	prescribing errors strength over- dosing errors	B B			<i>á priori</i> specified- yes, main outcome AE reported - no Risks to patient safety reported – yes, prescribing errors
7	Humphries 2007 interrupted time- series without control	Doctor's office	CDSS in EHR with e- prescribing System initiated Alerts for interacting drug-pairs	pre-intervention; no CDSS alerts	Proportion of instances of co- dispensing interacting drugs pairs	B			<i>á priori</i> specified- yes, main outcome AE reported - no Risks to patient safety reported - no
8	Kinnaird 2003 retrospective cohort; no comparison group	Hospital out- patient clinic	e-prescribing	none			patients not retrieving prescribed medications at pharmacy	2.8% of prescriptions not claimed 33% of unclaimed prescriptions considered essential	<i>á priori</i> specified- yes, main outcome AE reported- no Risks to patient safety reported- main outcome
9	Nanji 2011 retrospective cohort	ambulatory, not specified	Paper or e- prescriptions generated from EHR	none	% prescriptions with medication errors % prescriptions with potential	11.7% 4.2%			<i>á priori</i> specified-yes, main outcomes AE reported-no

					ADEs				Risks to patient safety reported-yes, main outcomes
10	Palchuk 2010 retrospective survey	Doctor's office	e-prescribing in EHR	none	Discrepancies between free text fields and check-off fields in individual Rxs	Rx with ≥ 1 discrepancy: 5.8%, of which 16.8% could lead to hospital admission or death Discrepancy rate of high risk for ADE medications = 24%			<i>á priori</i> specified-yes, main outcome AE reported-no Risks to patient safety reported-High rate of discrepancies that could lead to high risk ADEs
11	Schwarz 2012 RCT; Comparison of two versions of same CDSS program	Hospital out-patient clinic and doctor's office	CDSS in EHR Simple alerts vs. multifaceted alerts regarding prescribing safety for women who might be pregnant	no usual care comparison	risky prescribing; i.e. prescriptions of teratogenic medications	NS			<i>á priori</i> specified- yes, main outcome AE reported-no Risks to patient safety reported-no
12	Steele 2005 non-controlled before and after retrospective cohort	Hospital out-patient clinic	CDSS in EHR System initiated Alerts for drug-laboratory interaction	pre-intervention; no CDSS alerts	Probability of adverse drug events Number of medication orders not completed after any alert display Number of medication orders not completed after alert display for abnormal laboratory values	NS NS B			<i>á priori</i> specified- yes, main outcome AE reported - no Risks to patient safety reported - no

13	Varkey 2007 retrospective survey	Hospital out-patient clinic	CDSS with computer generated paper prescriptions CDSS initiation not clear	Handwritten prescriptions	pharmacist intercepted Rx with errors	significant decrease in error (4.9% vs 7.4%, p=.0048)			<i>á priori</i> specified-no AE reported-no Risks to patient safety reported-no
14	Volmer 2012 observational	ambulatory, not specified	e-Rx or computer-generated paper prescription	Manually written prescriptions	Comparison of frequency of error between e-Rx, PC generated paper Rx and handwritten Rx	Less errors for e-Rx compared to computer-generated or manually written prescriptions			<i>á priori</i> specified-no AE reported-no Risks to patient safety reported-no
15	Weingart 2003 retrospective series	Doctor's office	CDSS in EHR System initiated Allergy and drug interaction alerts	none	Decision to override alerts	override of 91.2% of drug allergy alerts 89.4% level 1 drug interaction alerts 96.3% of level 2 drug interaction alerts 85.4% of level 3 drug interaction alerts.	adverse drug events	Three interacting drug perscriptions resulting in - 1supratherapeutic anticoagulation - one epistaxis - itching triggered by drug interaction	<i>á priori</i> specified- yes, main outcome AE reported- 3 ADEs occurred in prescribing non-compliant with alerts Risks to patient safety reported-yes, overriding of prescribing alerts
16	Zillich 2008 Non-controlled before and after Retrospective cohort	Hospital out-patient clinic	CDSS in EHR System initiated Drug-specific alerts for prescribing for elderly patients	pre-intervention; no CDSS alerts	Patients with ≥1 high-risk medication	B			<i>á priori</i> specified-yes, main outcome AE reported-no Risks to patient safety reported-yes, overriding of prescribing alerts