Supplementary Material 4: Summary of the included primary studies

Primary study	Country	Area	Tool	Methodology	Number of participants / sample (n)[1]
Alam (2010)	Bangladesh (urban)	MCH	Custom design	Case study	27 CHWs, 6 supervisors
Andreatta (2011)	Ghana (rural)	MCH	SMS	Case study	8 traditional birth attendants, 2 midwifes
Barrington (2010)	Tanzania (rural)	Malaria	SMS	Pilot study	Health facility workers at 129 rural clinics
Chang (2011)	Uganda (rural)	AIDS	SMS	Mixed methods: RCT and qualitative process evaluation	29 Peer health care workers
Derenzi (2012)	Tanzania (rural and urban)	Chronic care (esp. HIV)	CommCare	Quasi-experimental: multiple experiments and designs	87 CHWs n=30
Diero (2006)	Kenya (rural)	Respiratory	Palm Pilot PDA	Case study	CHWs, unclear
Zurovac (2011)	Kenya (rural)	Malaria	SMS	Cluster RCT	119 CHWs

[1] Where not explicitly stated to the contrary, the number of intervention participants and the research sample was synonymous.

Gisore (2012)	Kenya (rural)	MCH	Phone and weighting scales	Case study	474 village elders
JSI (2013)	Rwanda (unclear)	Supply chain Management	Mobile phone	N/A (grey lit)	371 CHWs
Khan (2012)	Pakistan (urban)	TB	Custom design	Quasi-experimental: retrospective controlled	Community laypeople as TB screeners, unclear
Lemay (2012)	Malawi (rural)	Family planning/reproductive health/ HIV/AIDS knowledge	Frontline SMS	Mixed methods	638 CHWs
MacLeod (2012)	Ghana (rural)	MCH	MoTECH	Technical evaluation study	Community health volunteer, unclear
Mahmud (2010)	Malawi (rural)	Communication		Pilot study	75 CHWs
Ngabo (2012)	Rwanda (rural)	MCH	RapidSMS	Pilot study	432 CHWs
Palazeus (2013)	Mexico & Guatemala (rural)	Dosing	CommCare	Descriptive survey and qualitative interviews	17 CHWs
Ramachandran (2010)	India (rural)	MCH	Java applet	Case study	7 rural health workers

Svoronos (2010)	Tanzania (rural)	MCH	CommCare	Pilot study	5 CHWs
Tomlinson (2009)	South Africa (peri-urban)	Data collection	Java applet	Pilot study	24 CHWs
Blaschke (2009)	Malawi (rural)	Child nutrition	RapidSMS	Pilot study	Health surveillance assistant, unclear
Munro (2014)	Liberia (rural)	MCH	SMS	Quasi-experimental: Before/after design	99 traditional birth attendees
McNabb (2015)	Nigeria (urban)	MCH (ANC)	CommCare	Quasi-experimental Before/after design	152 CHWs, 20 supervisors
Martínez-Fernández (2015)	Guatemala (rural)	Infant mortality	Custom design	Case study	125 Community facilitators
Little (2013)	Ethiopia (rural)	Maternal health	Custom design	Case study	20 Health extension workers
Surka (2015)	South Africa (urban)	CVD screening	CommCare	Mixed methods pilot study	24 CHWs

Supplementary Material 5: Categorisation and re-analysis of included studies

	COLUMN 1		COLUMN 2				COLUMN 3			
Primary study	Intervention allocation	Agreement in allocation between systematic review	Reclassification of intervention as WPL?				Reclassification of intervention as ML?			
			Learning by-product of work	*Learning within work*	*Learning for work*	*Reclassification: fits WPL?[2]*	*Personalisation*	*Authenticity*	*Collaboration*	*Reclassification: fits ML?*
Alam (2010)	(1) Supervision & monitoring[c]; (2) Data collection[ab]	2 different allocations	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Andreatta (2011)	(1) Data collection[b]; (2) Training & education[ad]; Training[j] (3) Medication adherence[e]	4 different allocations	No evidence	No evidence	Training in the use of a data reporting protocol.	No	No evidence	No evidence	No evidence	No
Barrington (2010)	(1) Data collection[b]; (2) Training & education[a]; (3) Management[e]	2 different allocations	No evidence	No evidence	Training in the use of a mobile phone.	No	No evidence	No evidence	No evidence	No
Chang (2011)	(1) Communication[f] (2) Training &	4 different allocations	No evidence	• Asking questions	No evidence	Secondary	No evidence	No evidence	No evidence	No

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[2] Secondary refers to a study relating to workplace-based and/or mobile learning only superficially. This can be caused by a lack of detailed reporting of intervention design and implementation or by workplace-based and/or mobile learning only being a minor aspect of the applied intervention that is not fully developed.

	education[e]; (3) Monitoring & compliance[eg]);			• Getting information • Locating resource people						
DeRenzi (2012)	(1) Managament[f] (2) Communication[ab] (3) Monitoring & compliance[g] (4) Health system support[d]	4 different allocations	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Diero (2006)	(1) Standards and guidelines[d]	Single review	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Zurovac (2011)	(1) Decision-support[af] (2) Monitoring & compliance[edg] (3) Training & education[ad]	3 different allocations		• Giving and receiving feedback • Use of mediating artefacts	Being supervised	Yes		Contextualisation of knowledge in practice contexts		Yes
Gisore (2012)	(1) Data collection[f] (2) Training & education[d]	2 different allocations	No evidence	No evidence	Training on tool usage	No	No evidence	No evidence	No evidence	No
JSI (2013)	(1) Supervision[a] (2) Communication[a]	Single review	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Khan (2011)	(1) Decision-support[f]	Single review	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Lemay (2012)	(1) Communication[abd]	Agreement	No evidence	• Asking questions	No evidence	No	No evidence	No evidence	No evidence	No
McLeold (2012)	(1) Supervision[a] (2) Communication[a]	Single review	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Mahmud (2010)	(1) Training & education[de] (2) Communication	3 different allocations	No evidence	No evidence	Training on tool usage	No	No evidence	No evidence	No evidence	No

	af (3) Data collection[a]									
Ngabo (2012)	(1) Communication[af] (2) Supervision[a] (3) Medication adherence[e]	3 different allocations	No evidence	No evidence	Training on tool usage	No	No evidence	No evidence	Communication	No
Palazuelos (2013)	(1) Training & education[ai] (2) Medicine adherence[ai]	Agreement	No evidence	No evidence	Training on tool usage	No	No evidence	No evidence	No evidence	No
Ramachandran (2010)	(1) Education & training[ad]	Agreement	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Svoronos (2010)	(1) Training & education[a] (2) Decision support[a] (3) Monitoring & compliance[d] (4) Supervision & management[d] (5) Data collection[b]	5 different allocations	• Tackling challenging tasks and roles • Problem solving • Standardisation of practice	• Giving and receiving feedback • Use of mediating artefacts	• Being supervised • Training on tool usage	Yes	No evidence	Contextualised feedback & practice support	No evidence	Yes
Tomlinson (2009)	(1) Supervision and management[ad] (2) Communication[a] (3) Data collection[ef]	3 different allocations	No evidence	No evidence	No evidence	No	No evidence	No evidence	No evidence	No
Blaschke (2009)	(1) Decision-support[f] (2) Data collection[g]	2 different allocations	No evidence	• Learning from mistakes • Giving and receiving feedback	• Being supervised • Training on tool usage	Yes	No evidence	Contextualised feedback & practice support	No evidence	Yes
McNabb (2015)	(1) Decision-support[m] (2) Data collection[l]	2 different allocations	Tool forces practice decisions	No evidence	No evidence	Secondary	No evidence	No evidence	No evidence	No

Martı´nez-Ferna´ndez (2015)	(1) Decision-support[l] (2) Data collection[l] (3) Training[l]	Single review	No evidence	Consultation and logistical support.	Using phones for CPD	Yes	Distance learning using mobile tools			Yes
Little (2013)	(1) Data collection[alno] (2) Provider-Provider Communication[n]	2 different allocations	Tool forces practice decisions	No evidence	No evidence	Secondary	No evidence	No evidence	No evidence	No
Munro (2014)	(1) Data collection[lo]	Agreement			Learning to use and implement data collection

Training on tool usage | Secondary | No evidence | No evidence | No evidence | No |
| Surka (2014) | (1) Data collection[n] | Single review | Tool forces practice decisions | No evidence | Training on tool usage | Secondary | No evidence | No evidence | No evidence | No |

a=Agrawal (2015); b=Chib (2015); c=Goel (2013); d=Braun (2015); e=Aranda-jan (2014); f=Hall (2014); g=Kallander (2014); h=Hurt (2014); i=O'Donovan; j=Peiris (2014); k=Bloomfield (2014); l=Colaci (2016); m=Adepoju (2017); n=White (2016); o=Amoakoh (2016); p=Tian (2017)

The superscripts a–o above refer to the systematic reviews in which this study has been included. None of these primary studies were covered by Tian (2017).

Supplementary Material 6: Coding tool

Theory of learning	Learning processes		Studies coded to constitute workplace and mobile learning			
			Zurovac (2011)	Svoronos (2010)	Blaschke (2009)	Martinez-Fernandez (2015)
Workplace based learning	**Work Processes** with learning as a by-product	Participation in group processes				
		Working alongside others				
		Consultation				YES
		Tackling challenging tasks and roles				
		Problem solving				
		Trying things out				
		Consolidating, extending and refining skills	YES			YES
		Working with				YES

		clients				
	Learning Activities located **within** work or learning processes	Asking questions				
		Getting information	YES	YES	YES	YES
		Locating resource people				YES
		Listening & observing				
		Reflecting				
		Learning from mistakes				
		Giving and receiving feedback				
		Use of mediating artefacts				
	Learning Processes at or near the workplace	Being supervised		YES (see our previous table for details)		YES
		Being coached				YES

		Being mentored				
		Shadowing				
		Visiting other sites				
		Conferences				
		Short courses				YES
		Working for a qualification				
		Independent study				
Mobile learning	Personalisation	Agency	Medium: improved participants' ability to treat	Low: re-enforce target behaviour		High: able to call for help as needed
		Customisation				
	Authenticity	Situatedness	High: messages received at work (but in the linked paper noted that it was not linked to	High: phones used at work	Medium: feedback loops for the HSA	High: phones used at work

				training)			
		Contextualisation					
	Collaboration	Data sharing					
		Conversation					High: based on communication