Supplementary file 4: Study design and methods used to identify positive deviants and generate hypotheses about how they succeed

Included studies are organised by setting (primary care, secondary care and regional / national level provision). Each row represents an included article (n=37). Rows grouped together by colour (grey or white) represent unique positive deviance projects (n = 22).

| Author and year | Context of positive deviance and process used* | Stage 1 – Identifying positive deviants | | | Stage 2 – Generating hypotheses about how positive deviants succeed | |
		Design and main methods used	Main criteria for positive deviance	Time period positive deviance displayed for	Design and methods used	Comparison group used
Primary Care						
Bradley et al. 2012[54]	Single method No process explicitly stated	Quant – routine data (3 measures)	Consistently higher performance	9 months	Qual - 51 in depth interviews, 2 day site visits x 8 sites	Most improved and consistently lowest performers
Gabbay et al. 2013[21]	Single method Infer Bradley et al	Quant – routine data (3 measures)	Highest quintile of ranked surgeries	Ranked according to improvement over 18 months	Mixed methods – 2 surveys given to staff, 55 interviews	Lowest quintile of ranked surgeries
Taliani et al. 2013[20]	Single method Infer Bradley et al	Quant – routine data (3 measures)	Highest tertile of ranked surgeries	Ranked according to improvement over 18 months	Qual - 136 interviews	Everyone was included but hypotheses were developed by comparing with low performers
Kim et al. 2008[11]	Single method No process explicitly stated	Quant coding of nurse-patient consultations	Nurses – top 10% on one measure; Patients – top 15% on two measures	Nurses – average over 12 consultations; Patients – single consultations	Mixed methods – 34 interviews, 6 focus groups, minimal quant analysis to compare PDs with peers who did not communicate as effectively.	In essence only PDs

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		Design and main methods used	Main criteria for positive deviance	Time period positive deviance displayed for	Design and methods used	Comparison group used
Kraschnewski et al. 2013[22]	Single method No process explicitly stated	Quant – routine data	Higher levels of weight counselling. The group provided half of all weight counselling.	1 year	Quant – routine and patient data	Everyone was included
Ma et al. 2012[23]	Single method No process explicitly stated	Quant – routine data	Unclear what data were used in the analysis	None stated	Quant – routine and patient data	Everyone was included
Marsh et al. 2002[24]	Single method 5 Step PD cycle – not referenced	Qual – local community meetings	Descriptions of health status and behaviours	None stated	Qual – 27 situational analysis inquiries, 23 interviews, 4 focus groups, 5 PD inquiries (unclear what these were)	Compared to results of a situational analysis
Rose et al. 2012[25]	Single method No process explicitly stated	Quant – unclear whether routine data	Selected 3 sites within the top 10	2 years	Qual – 55 interviews, observation 4 hours (x 6 sites), document analysis	Selected 3 sites within the bottom 10
Secondary Care						
Abrahamson et al. 2011a[26]	Single method No process explicitly stated	Stage not completed	-	-	Qual – 30 minute structured telephone interviews	PDs not identified
Abrahamson et al. 2011b[27]	Single method No process explicitly stated	Stage not completed	-	-	Qual – 30 minute structured telephone interviews	PDs not identified
Anzarut et al. 2011[28]	Single method No process explicitly stated	Stage not completed	-	-	Quant - Survey	PDs not identified
Curry et al. 2011[29]	Single method Infer Bradley et al.	Quant – routine data	Hospitals within top 5%	2 years	Qual – 1-2 day site visits x 11 sites, 158 interviews	Hospitals within bottom 5%
Cherlin et al. 2012[30]	Single method No process explicitly stated	Quant – routine data	Hospitals within top 5%	3 years	Qual – 1-2 day site visits x 11 sites, 158 interviews (57 interviews used for this analysis)	Hospitals within bottom 5%
Bradley et al. 2012[31]	Single method Infer Bradley et al.	Stage done elsewhere	-	-	Stage done elsewhere	-
Landman et al. 2013[32]	Single method No process explicitly stated	Stage done elsewhere	-	-	Qual – 1-2 day site visits x 11 sites, 158 interviews (85 interviews used for this analysis)	Hospitals within bottom 5%
Griffith et al. 2013[10]	Single method No process explicitly stated	Quant – national award	Winners of an award	None stated	Qual – document analysis (50 pages x 9 organisations)	PDs only

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Kennedy et al. 1999[33]	Single method No process explicitly stated	Quant – analysis of case notes	6 point eligibility criteria, many of which do not infer high performance	18 months	Quant – quantitative analysis of a case note review	PDs only
Lindberg & Schneider 2013[34]	Single method Use the process discussed by Sterin and Choo 2000	Unclear if stage was completed	No criteria	None stated	Qual – orientation / PD training, DADs / meetings every week, site visits, document review	PDs were not identified
Lindberg et al. 2013[35]	Complex intervention No process explicitly stated	Qual - DADs	No criteria	None stated	Mixed methods – DADs (unclear how many), surveys, case study including observation, site visits and focus groups	Everyone was included
Downham et al. 2012[36]	Complex intervention No process explicitly stated	Stage done elsewhere	-	-	Qual – DADs, 'kick off' sessions	Everyone was included
Marra et al. 2010[37]	Single method No process explicitly stated	Qual – peer recommendation	Description of healthcare workers attitudes	None stated	Mixed methods – surveys, monitoring, bimonthly DADs, PD training	Everyone was included
Marra et al. 2011[38]	Single method No process explicitly stated	Qual – peer recommendation	Description of healthcare workers attitudes	None stated	Mixed methods – surveys, monitoring, bimonthly DADs, PD training	Everyone was included
de MacEdo et al. 2012[39]	Single method No process explicitly stated	Stage done elsewhere	-	-	Mixed methods – surveys, monitoring, bi-monthly DADs	Everyone was included
Marra et al. 2013[40]	Single method No process explicitly stated	Stage done elsewhere	-	-	Stage done elsewhere	-
Zaldi et al. 2012[41]	Single method 6 Ds process referenced by Marsh et al 2004	Quant – non-routine data (2 measures)	Those who ranked well in both measures	1.5 months	Qual – 20 interviews, 1 focus group	PDs only
Awad et al. 2009[42]	Complex intervention 4 Ds process [a]	Mixed methods – unclear but infer data and observation / DADs	No criteria	None stated	Unclear but inferred – DADs, site visits	Everyone was included
Bonuel et al. 2009[43]	Complex intervention No process explicitly stated	Unclear if stage was completed	-	-	Unclear if stage was completed	-
Ellingson et al. 2011[44]	Complex intervention No process explicitly stated	Unclear if stage was completed	-	-	Unclear if stage was completed	-
Evans et al. 2013[45]	Complex intervention No process explicitly stated	Mixed methods – appear to use data and observation	Those making "exceptional progress"	None stated	Unclear but inferred – DADs, workshops, interviews with PD consultants	Everyone was included

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		Design and main methods used	Main criteria for positive deviance	Time period positive deviance displayed for	Design and methods used	Comparison group used
Forsha et al. 2007[46]	Complex intervention No process explicitly stated	Unclear if stage was completed	-	-	Unclear if stage was completed	-
Jain et al. 2011[47]	Complex intervention No process explicitly stated	Unclear if stage was completed	-	-	Unclear if stage was completed	-
Regional / National level / other						
Awofeso et al. 2008[48]	Complex intervention 4 Ds process [b]	Quant and qual data – surveys, non-routine data, observation	No criteria	None stated	Unclear what methods used	PDs only
Green et al. 2006[49]	Single method No process explicitly stated	Quant – routine data (3 measures) but also aware of high performance through other methods e.g. winning an award	Unclear whether this was based on data improvements or winning the award	Unclear – possibly 1 year	Qual – interviews (quantified as 58000 words), 500 pages of document analysis, 100 hours of observation	PDs only
Klaiman et al. 2013[50]	Multiple methods used Bradley et al.	Mixed methods – database review, self-select and peer recommendation	No criteria	Assume 1 year (length of the pandemic)	Qual – 20 in depth interviews (15 interviews used for this analysis)	PDs only
Klaiman et al. 2014[51]	Multiple methods used Bradley et al.	Mixed methods – database review, self-select and peer recommendation	No criteria	Assume 1 year (length of the pandemic)	Qual – 20 in depth interviews (13interviews used for this analysis)	PDs only
Naimoli et al. 2008[52]	Complex intervention No process explicitly stated	Quant – routine data	Immunization coverage history, populations size, status of World Bank support and feasibility of data collection	6 years	Qual - Key informant interviews, document review, case narratives constructed with participant involvement – all took 5-7 days in each site	Additional performance levels - medium high, medium low, low, those with exceptional characteristics.
Primary and secondary care						

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		Design and main methods used	Main criteria for positive deviance	Time period positive deviance displayed for	Design and methods used	Comparison group used
Assefa et al. 2014[53]	Single method No process explicitly stated	Quant – routine data (3 measures)	Higher performance compared to a reference	Unclear whether 1 or 2 years	Qual – 72 key informant interviews, 1 focus group	Facilities with lower and improved performance

Abbreviations: Quant – quantitative date; Qual – qualitative date, PDs – positive deviants; DADs - Discovery and Action Dialogues

* References for processes used - Bradley et al 2009[7]; Sterin and Choo 2000[67]; Marsh et al. 2004[6]; a - Sparks 2004;[68] b - Lapping et al 2002[69] (all references available within the main text).