

Investigating the Implementation of Infection Prevention and Control Practices in Neonatal Care Across Country Income Levels: A Systematic Review

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SUPPLEMENTARY FILE

Overview of Included Studies & Extracted Data

Abbreviations

BSI	Bloodstream Infection
CLABSI/CRBSI	Central-line associated Bloodstream Infection/Catheter-related Bloodstream Infection
IPC	Infection Prevention and Control
HAI	Healthcare-associated Infection
HIC	High-Income Country
ImD	Implementation Determinants
ImS	Implementation Strategies
LMIC	Low-or Middle-Income Country
NEC	Necrotizing Enterocolitis
VAP	Ventilator-associated Pneumonia

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Study Characteristics

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Alimohammadzadeh <i>et al.</i> [1]	2017	Mixed Methods Study	IPC, unspecified	Iran	LMIC	ImD/ImS
Almeida <i>et al.</i> [2]	2017	Quantitative Descriptive Study	Sepsis	Portugal	HIC	ImS
Alrumi <i>et al.</i> [3]	2020	Non-Randomized Trial	IPC, unspecified	Palestinian Territories	LMIC	ImD/ImS
Alshaikh <i>et al.</i> [4]	2015	Non-Randomized Trial	Human Milk	Canada	HIC	ImS
Alslaim <i>et al.</i> [5]	2022	Mixed Methods Study	IPC, unspecified	United States	HIC	ImD/ImS
Amaan <i>et al.</i> [6]	2022	Non-Randomized Trial	Hand Hygiene	Bangladesh	LMIC	ImD/ImS
Anderson [7]	2016	Quantitative Descriptive Study	Probiotics	United States	HIC	ImD
Aragona <i>et al.</i> [8]	2021	Mixed Methods Study	Pandemic Prevention	United States	HIC	ImD
Arena <i>et al.</i> [9]	2013	Non-Randomized Trial	Outbreak Containment	Italy	HIC	ImS
Azab <i>et al.</i> [10]	2015	Non-Randomized Trial	VAP Prevention	Egypt	LMIC	ImS
Azmeraw Getie <i>et al.</i> [11]	2022	Qualitative Study	Kangaroo Care	Ethiopia	LMIC	ImD
Badparva <i>et al.</i> [12]	2023	Qualitative Study	CLABSI/CRBSI Prevention	Iran	LMIC	ImD
Balachander <i>et al.</i> [13]	2020	Non-Randomized Trial	Outbreak Containment	India	LMIC	ImS
Balla <i>et al.</i> [14]	2018	Non-Randomized Trial	CLABSI/CRBSI Prevention	n/a	n/a	ImD/ImS
Barrett <i>et al.</i> [15]	2023	Non-Randomized Trial	Pandemic Prevention	United States	HIC	ImD/ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Batthula <i>et al.</i> [16]	2021	Non-Randomized Trial	Sepsis	India	LMIC	ImD/ImS
Bechmann <i>et al.</i> [17]	2023	Non-Randomized Trial	Outbreak Containment	Germany	HIC	ImS
Beekman & Steward [18]	2020	Non-Randomized Trial	Skin Antisepsis	United States	HIC	ImD/ImS
Bezerra <i>et al.</i> [19]	2021	Quantitative Descriptive Study	Hand Hygiene	Brazil	LMIC	ImD
Bharadwaj <i>et al.</i> [20]	2019	Non-Randomized Trial	Outbreak Containment	Singapore	HIC	ImD/ImS
Bierlaire <i>et al.</i> [21]	2021	Non-Randomized Trial	CLABSI/CRBSI Prevention	Belgium	HIC	ImD/ImS
Biswas <i>et al.</i> [22]	2019	Non-Randomized Trial	Hand Hygiene	India	LMIC	ImD/ImS
Bowen <i>et al.</i> [23]	2017	Non-Randomized Trial	BSI Prevention	Australia	HIC	ImD/ImS
Cantey <i>et al.</i> [24]	2013	Non-Randomized Trial	Outbreak Containment	United States	HIC	ImD/ImS
Caspari <i>et al.</i> [25]	2017	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Ceballos <i>et al.</i> [26]	2013	Non-Randomized Trial	HAI Prevention	United States	HIC	ImD/ImS
Chandonnet <i>et al.</i> [27]	2017	Non-Randomized Trial	Hand Hygiene	United States	HIC	ImD/ImS
Chandonnet <i>et al.</i> [28]	2013	Qualitative Study	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Cowden <i>et al.</i> [29]	2020	Qualitative Study	IPC, unspecified	Zambia	LMIC	ImD/ImS
Cross <i>et al.</i> [30]	2016	Qualitative Study	Environmental Cleaning	Multiple	LMIC	ImD
Cross <i>et al.</i> [31]	2019	Mixed Methods Study	Environmental Cleaning	Multiple	LMIC	ImD

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Dawczynski <i>et al.</i> [32]	2017	Quantitative Descriptive Study	IPC, unspecified	Germany	HIC	ImD
Delaney Manthe <i>et al.</i> [33]	2019	Qualitative Study	Human Milk	United States	HIC	ImD/ImS
Deshommes <i>et al.</i> [34]	2021	Non-Randomized Trial	Hand Hygiene	Haiti	LMIC	ImD/ImS
Dramowski <i>et al.</i> [35]	2021	Non-Randomized Trial	Environmental Cleaning	South Africa	LMIC	ImD/ImS
Dumpa <i>et al.</i> [36]	2019	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Dye <i>et al.</i> [37]	2021	Qualitative Study	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Erdei <i>et al.</i> [38]	2015	Qualitative Study	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
EsquéRuiz <i>et al.</i> [39]	2015	Qualitative Study	IPC, unspecified	Spain	HIC	ImD/ImS
Fabbri <i>et al.</i> [40]	2013	Non-Randomized Trial	Outbreak Containment	Italy	HIC	ImD/ImS
Fernández-Prada <i>et al.</i> [41]	2019	Non-Randomized Trial	Outbreak Containment	Spain	HIC	ImS
Ferry <i>et al.</i> [42]	2020	Non-Randomized Trial	Outbreak Containment	France	HIC	ImS
Fisher <i>et al.</i> [43]	2013	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Fischer Fumeaux <i>et al.</i> [44]	2017	Non-Randomized Trial	Human Milk	France	HIC	ImD
Gafirimbi <i>et al.</i> [45]	2016	Qualitative Study	HAI Prevention	Rwanda	LMIC	ImD/ImS
Gajic <i>et al.</i> [46]	2021	Non-Randomized Trial	Outbreak Containment	Serbia	LMIC	ImS
García González <i>et al.</i> [47]	2017	Non-Randomized Trial	HAI Prevention	Spain	HIC	ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Gephart <i>et al.</i> [48]	2021	Mixed Methods Study	NEC Prevention	United States	HIC	ImD/ImS
Gephart & Quinn [49]	2019	Mixed Methods Study	NEC Prevention	United States	HIC	ImD/ImS
Geraci <i>et al.</i> [50]	2014	Quantitative Descriptive Study	HAI Prevention	Italy	HIC	ImS
Giuffrè <i>et al.</i> [51]	2013	Non-Randomized Trial	Outbreak Containment	Italy	HIC	ImS
Gon <i>et al.</i> [52]	2017	Mixed Methods Study	IPC, unspecified	Tanzania	LMIC	ImD/ImS
Gon <i>et al.</i> [53]	2021	Mixed Methods Study	Environmental Cleaning	Tanzania	LMIC	ImD/ImS
Goodchild <i>et al.</i> [54]	2018	Non-Randomized Trial	Human Milk	Australia	HIC	ImD/ImS
Gopalakrishnan <i>et al.</i> [55]	2021	Non-Randomized Trial	Hand Hygiene	India	LMIC	ImS
Grover <i>et al.</i> [56]	2015	Qualitative Study	CLABSI/CRBSI Prevention	United States	HIC	ImS
Hamza <i>et al.</i> [57]	2022	Non-Randomized Trial	CLABSI/CRBSI Prevention	Egypt	LMIC	ImS
Hanley <i>et al.</i> [58]	2022	Qualitative Study	Pandemic Prevention	United Kingdom	HIC	ImD/ImS
Hawes & Lee [59]	2018	Qualitative Study	CLABSI/CRBSI Prevention	Canada	HIC	ImD/ImS
Hayashi <i>et al.</i> [60]	2021	Non-Randomized Trial	Vaccination	United States	HIC	ImD/ImS
Hensel <i>et al.</i> [61]	2017	Non-Randomized Trial	Outbreak Containment	Germany	HIC	ImS
Herbeć <i>et al.</i> [62]	2020	Qualitative Study	IPC, unspecified	Zimbabwe	LMIC	ImD/ImS
Hightower <i>et al.</i> [63]	2022	Qualitative Study	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Howard-Jones <i>et al.</i> [64]	2022	Non-Randomized Trial	Outbreak Containment	Australia	HIC	ImD/ImS
Hussain <i>et al.</i> [65]	2021	Non-Randomized Trial	CLABSI/CRBSI Prevention	Pakistan	LMIC	ImS
Jacobs Pepin <i>et al.</i> [66]	2019	Non-Randomized Trial	VAP Prevention	United States	HIC	ImD/ImS
Jahan <i>et al.</i> [67]	2022	Non-Randomized Trial	VAP Prevention	Bangladesh	LMIC	ImS
Jain <i>et al.</i> [68]	2023	Non-Randomized Trial	Kangaroo Care	India	LMIC	ImD/ImS
Johnson <i>et al.</i> [69]	2022	Non-Randomized Trial	HAI Prevention	India	LMIC	ImS
Kallam <i>et al.</i> [70]	2018	Non-Randomized Trial	Hand Hygiene	Ghana	LMIC	ImD/ImS
Karabay <i>et al.</i> [71]	2019	Non-Randomized Trial	Outbreak Containment	Turkey	LMIC	ImS
Khurana <i>et al.</i> 2018 [72]	2018	Non-Randomized Trial	HAI Prevention	India	LMIC	ImS
Kumar <i>et al.</i> [73]	2022	Non-Randomized Trial	Hand Hygiene	India	LMIC	ImD/ImS
Lauderbaugh <i>et al.</i> [74]	2019	Non-Randomized Trial	VAP Prevention	United States	HIC	ImD/ImS
Lee <i>et al.</i> [75]	2015	Non-Randomized Trial	IPC, unspecified	Canada	HIC	ImS
Linam <i>et al.</i> [76]	2019	Non-Randomized Trial	HAI Prevention	United States	HIC	ImS
López <i>et al.</i> [77]	2013	Non-Randomized Trial	Sepsis Prevention	Nicaragua	LMIC	ImD/ImS
Madrid-Aguilar <i>et al.</i> [78]	2019	Non-Randomized Trial	BSI Prevention	Spain	HIC	ImD/ImS
Mahieu <i>et al.</i> [79]	2022	Non-Randomized Trial	CLABSI/CRBSI Prevention	Belgium	HIC	ImD/ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Manerkar <i>et al.</i> [80]	2022	Non-Randomized Trial	Human Milk	India	LMIC	ImD/ImS
Manzo <i>et al.</i> 2022 [81]	2022	Mixed Methods Study	CLABSI/CRBSI Prevention	Brazil	LMIC	ImD
Maria <i>et al.</i> [82]	2022	Non-Randomized Trial	Human Milk	India	LMIC	ImD/ImS
Maria <i>et al.</i> [83]	2022	Qualitative Study	Hand Hygiene	India	LMIC	ImD/ImS
Marofi <i>et al.</i> [84]	2017	Non-Randomized Trial	HAI Prevention	Iran	LMIC	ImS
Marom <i>et al.</i> [85]	2020	Non-Randomized Trial	Outbreak Containment	Israel	HIC	ImS
McCord <i>et al.</i> [86]	2019	Quantitative Descriptive Study	Skin Antisepsis	Canada	HIC	ImD/ImS
Morgan <i>et al.</i> [87]	2018	Mixed Methods Study	Kangaroo Care	Uganda	LMIC	ImD/ImS
Mukerji <i>et al.</i> [88]	2013	Non-Randomized Trial	Hand Hygiene	Canada	HIC	ImD/ImS
Mwananyanda <i>et al.</i> [89]	2019	Non-Randomized Trial	BSI Prevention	Zambia	LMIC	ImS
Neill <i>et al.</i> [90]	2016	Quantitative Descriptive Study	BSI Prevention	United States	HIC	ImS
Németh <i>et al.</i> [91]	2022	Quantitative Descriptive Study	Hand Hygiene	Hungary	HIC	ImD/ImS
Ngugi <i>et al.</i> [92]	2019	Mixed Methods Study	Hand Hygiene	Kenya	LMIC	ImD/ImS
Oko <i>et al.</i> [93]	2022	Non-Randomized Trial	Hand Hygiene	Nigeria	LMIC	ImD
Pahwa <i>et al.</i> [94]	2018	Qualitative Study	IPC, unspecified	India	LMIC	ImD/ImS
Pallotto <i>et al.</i> [95]	2017	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Parga <i>et al.</i> [96]	2017	Non-Randomized Trial	Hand Hygiene	United States	HIC	ImD/ImS
Pasricha <i>et al.</i> [97]	2021	Non-Randomized Trial	Hand Hygiene	Canada	HIC	ImD/ImS
Patel <i>et al.</i> [98]	2014	Non-Randomized Trial	NEC Prevention	United States	HIC	ImS
Pettit <i>et al.</i> [99]	2017	Non-Randomized Trial	Skin Antisepsis	United States	HIC	ImS
Phan <i>et al.</i> [100]	2018	Non-Randomized Trial	Hand Hygiene	Viet Nam	LMIC	ImS
Phan <i>et al.</i> [101]	2020	Non-Randomized Trial	CLABSI/CRBSI Prevention	Viet Nam	LMIC	ImS
Pharande <i>et al.</i> [102]	2018	Non-Randomized Trial	Sepsis	Australia	HIC	ImD/ImS
Piazza <i>et al.</i> [103]	2016	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImS
Pletsch <i>et al.</i> [104]	2013	Qualitative Study	Human Milk	Canada	HIC	ImD/ImS
Prashantha <i>et al.</i> [105]	2019	Non-Randomized Trial	Sepsis Prevention	India	LMIC	ImS
Profit <i>et al.</i> [106]	2017	Quantitative Descriptive Study	HAI Prevention	United States	HIC	ImD
Quinones Cardona <i>et al.</i> [107]	2021	Non-Randomized Trial	Sepsis Prevention	United States	HIC	ImS
Radbone <i>et al.</i> [108]	2013	Qualitative Study	NEC Prevention	United Kingdom	HIC	ImD/ImS
Rai <i>et al.</i> [109]	2021	Non-Randomized Trial	Hand Hygiene	India	LMIC	ImD/ImS
Ramos Ferreira Curan <i>et al.</i> [110]	2017	Mixed Methods Study	CLABSI/CRBSI Prevention	Brazil	LMIC	ImS
Rogers <i>et al.</i> [111]	2021	Non-Randomized Trial	Skin Integrity	United States	HIC	ImD/ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Rohsiswatmo <i>et al.</i> [112]	2014	Mixed Methods Study	BSI Prevention	Indonesia	LMIC	ImS
Rojas Beytía <i>et al.</i> [113]	2020	Qualitative Study	Human Milk	Chile	HIC	ImS
Rolnitsky <i>et al.</i> [114]	2019	Non-Randomized Trial	Probiotics	Canada	HIC	ImS
Rosenthal <i>et al.</i> [115]	2013	Non-Randomized Trial	CLABSI/CRBSI Prevention	Multiple	LMIC	ImS
Rosenthal <i>et al.</i> [116]	2013	Non-Randomized Trial	Hand Hygiene	Multiple	LMIC	ImS
Ruch-Ross <i>et al.</i> [117]	2014	Quantitative Descriptive Study	Pandemic Prevention	United States	HIC	ImD
Sabry & Ibrahim [118]	2021	Non-Randomized Trial	Sepsis Prevention	Egypt	LMIC	ImS
Sadeghi-Moghaddam <i>et al.</i> [119]	2015	Non-Randomized Trial	Hand Hygiene	Iran	LMIC	ImS
Salem & Youssef [120]	2017	Qualitative Study	IPC, unspecified	Egypt	LMIC	ImD/ImS
Saporito <i>et al.</i> [121]	2021	Non-Randomized Trial	HAI Prevention	Italy	HIC	ImS
Shepherd <i>et al.</i> [122]	2015	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Shettigar <i>et al.</i> [123]	2021	Non-Randomized Trial	HAI Prevention	India	LMIC	ImD/ImS
Short [124]	2019	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImS
Simen-Kapeu <i>et al.</i> [125]	2015	Mixed Methods Study	IPC, unspecified	Multiple	LMIC	ImD
Singh <i>et al.</i> [126]	2021	Non-Randomized Trial	Hand Hygiene	India	LMIC	ImD/ImS
Sinha <i>et al.</i> [127]	2016	Non-Randomized Trial	CLABSI/CRBSI Prevention	United Kingdom	HIC	ImD/ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Somasekhara Aradhya <i>et al.</i> [128]	2022	Non-Randomized Trial	Environmental Cleaning	India	LMIC	ImD/ImS
Song <i>et al.</i> [129]	2013	Non-Randomized Trial	Hand Hygiene	United States	HIC	ImD/ImS
Steiner <i>et al.</i> [130]	2015	Non-Randomized Trial	CLABSI/CRBSI Prevention	n/a	n/a	ImD/ImS
Stone <i>et al.</i> [131]	2016	Qualitative Study	Human Milk	United States	HIC	ImD/ImS
Stroeve <i>et al.</i> 2020 [132]	2020	Qualitative Study	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Sunkwa-Mills <i>et al.</i> [133]	2020	Qualitative Study	HAI Prevention	Ghana	LMIC	ImD/ImS
Szél <i>et al.</i> [134]	2017	Non-Randomized Trial	Outbreak Containment	Hungary	HIC	ImS
Taryana <i>et al.</i> [135]	2019	Non-Randomized Trial	Hand Hygiene	Indonesia	LMIC	ImS
Taylor <i>et al.</i> [136]	2017	Non-Randomized Trial	CLABSI/CRBSI Prevention	Australia	HIC	ImS
Thakur <i>et al.</i> [137]	2022	Non-Randomized Trial	Outbreak Containment	India	LMIC	ImS
Theron <i>et al.</i> [138]	2022	Qualitative Study	HAI Prevention	South Africa	LMIC	ImD
Thomas <i>et al.</i> [139]	2019	Non-Randomized Trial	Hand Hygiene	India	LMIC	ImD/ImS
Ting <i>et al.</i> [140]	2013	Non-Randomized Trial	CLABSI/CRBSI Prevention	Canada	HIC	ImS
Tran <i>et al.</i> [141]	2018	Non-Randomized Trial	IPC, unspecified	Viet Nam	LMIC	ImS
Triantafillou <i>et al.</i> [142]	2020	Qualitative Study	HAI Prevention	Greece	HIC	ImD
Trudel <i>et al.</i> [143]	2018	Qualitative Study	HAI Prevention	Canada	HIC	ImD/ImS

Authors	Year	Study Design	IPC Practice/Area	Country	Income Level	Content
Tsiatsiou <i>et al.</i> [144]	2015	Non-Randomized Trial	Outbreak Containment	Greece	HIC	ImS
Umulisa <i>et al.</i> [145]	2016	Non-Randomized Trial	Hand Hygiene	Rwanda	LMIC	ImD/ImS
Van Rostenberghe <i>et al.</i> [146]	2014	Non-Randomized Trial	IPC, unspecified	Malaysia	LMIC	ImS
Verma <i>et al.</i> [147]	2017	Randomized Controlled Trial	HAI Prevention	India	LMIC	ImS
Villegas Sánchez <i>et al.</i> [148]	2014	Non-Randomized Trial	CLABSI/CRBSI Prevention	n/a	n/a	ImS
Weber [149]	2016	Non-Randomized Trial	VAP Prevention	United States	HIC	ImD/ImS
Weiss <i>et al.</i> [150]	2021	Qualitative Study	NEC Prevention	United States	HIC	ImD/ImS
Wilder <i>et al.</i> [151]	2016	Non-Randomized Trial	CLABSI/CRBSI Prevention	United States	HIC	ImD/ImS
Yawson & Hesse [152]	2013	Non-Randomized Trial	Hand Hygiene	Ghana	LMIC	ImD
Zachariah <i>et al.</i> [153]	2014	Quantitative Descriptive Study	CLABSI/CRBSI Prevention	United States	HIC	ImS
Zhou & Chen [154]	2022	Non-Randomized Trial	HAI Prevention	China	LMIC	ImD
Zhou <i>et al.</i> [155]	2015	Non-Randomized Trial	CLABSI/CRBSI Prevention	China	LMIC	ImS
Zhou <i>et al.</i> [156]	2020	Quantitative Descriptive Study	Human Milk	China	LMIC	ImS

Implementation Determinants

	Barriers	Facilitators
Outer Setting		
Critical Incidents	Barrett et al. 2023 Jain et al. 2023 Manerkar et al. 2022 Maria et al. 2022 Triantafillou et al. 2020	
External Pressure		Wilder et al. 2016
Financing	Simen-Kapeu et al. 2015	
Local Attitudes	Cowden et al. 2020 López et al. 2013 Morgan et al. 2018 Simen-Kapeu et al. 2015 Sunkwa-Mills et al. 2020 Triantafillou et al. 2020	
Local Conditions	Herbeć et al. 2020 Okó et al. 2022 Simen-Kapeu et al. 2015 Sunkwa-Mills et al. 2020 Triantafillou et al. 2020	Beekman & Steward 2020
Partnerships & Connections	Simen-Kapeu et al. 2015	Dawczynski et al. 2017 Dumpa et al. 2019 Dye et al. 2021 Erdei et al. 2015 Gephart et al. 2019 Hawes & Lee 2018 Pletsch et al. 2013
Policies & Laws	Anderson 2016 Simen-Kapeu et al. 2015 Triantafillou et al. 2020	Gephart et al. 2019 Maria et al. 2022
Inner Setting		
Access to Knowledge & Information	Alimohammadzadeh et al. 2017	Alslaim et al. 2022

Barriers	Facilitators
Amaan et al. 2022	Azmeraw Getie et al. 2022
Anderson 2016	Bierlaire et al. 2021
Aragona et al. 2021	Cowden et al. 2020
Badparva et al. 2023	Dramowski et al. 2021
Batthula et al. 2021	Erdei et al. 2015
Ceballos et al. 2013	Fisher et al. 2013
Cross et al. 2016	Hanley et al. 2022
Deshommes et al. 2021	Hawes & Lee 2018
Dye et al. 2021	Herbeć et al. 2020
EsquéRuiz et al. 2015	López et al. 2013
Gephart et al. 2021	Manzo et al. 2022
Gon et al. 2021	Maria et al. 2022
Goodchild et al. 2018	Morgan et al. 2018
Hanley et al. 2022	Ngugi et al. 2019
Hawes & Lee 2018	Pahwa et al. 2018
Hayashi et al. 2021	Radbone et al. 2013
Herbeć et al. 2020	Ruch-Ross et al. 2014
Jacobs Pepin et al. 2019	Sinha et al. 2016
Kumar et al. 2022	Stone et al. 2016
Manerkar et al. 2022	Zhou & Chen 2022
Manzo et al. 2022	
Maria et al. 2022	
Morgan et al. 2018	
Pahwa et al. 2018	
Pasricha et al. 2021	
Rai et al. 2021	
Rogers et al. 2021	
Rojas Beytia et al. 2020	
Salem & Youssef 2017	
Simen-Kapeu et al. 2015	
Song et al. 2013	
Steiner et al. 2015	
Stroeve et al. 2020	
Sunkwa-Mills et al. 2020	
Theron et al. 2022	
Thomas et al. 2019	

	Barriers	Facilitators
	Triantafyllou et al. 2020 Trudel et al. 2018 Weber 2016 Weiss et al. 2021 Wilder et al. 2016	
Available Resources	Alimohammadzadeh et al. 2017 Alrumi et al. 2020 Amaan et al. 2022 Azmeraw Getie et al. 2022 Badparva et al. 2023 Balla et al. 2018 Barrett et al. 2023 Batthula et al. 2021 Bharadwaj et al. 2019 Biswas et al. 2019 Cantey et al. 2013 Ceballos et al. 2013 Chandonnet et al. 2013 Cowden et al. 2020 Dawczynski et al. 2017 Deshommes et al. 2021 Dramowski et al. 2021 Erdei et al. 2015 Fischer Fumeaux et al. 2017 Gafirimbi et al. 2016 Gon et al. 2017 Gon et al. 2021 Hanley et al. 2022 Hawes & Lee 2018 Herbec et al. 2020 Hightower et al. 2022 Kumar et al. 2022 Lauderbaugh et al. 2019 López et al. 2013 Manzo et al. 2022 Maria et al. 2022	Barrett et al. 2023 Gafirimbi et al. 2016 Gon et al. 2021 Maria et al. 2022 Ngugi et al. 2019 Okó et al. 2022 Pasricha et al. 2021 Rojas Beytía et al. 2020 Sinha et al. 2016 Yawson & Hesse 2013

	Barriers	Facilitators
	Morgan et al. 2018 Ngugi et al. 2019 Oko et al. 2022 Pasricha et al. 2021 Rai et al. 2021 Salem & Youssef 2017 Singh et al. 2021 Song et al. 2013 Sunkwa-Mills et al. 2020 Theron et al. 2022 Thomas et al. 2019 Triantafillou et al. 2020 Trudel et al. 2018 Weiss et al. 2021 Yawson & Hesse 2013	
Communication	Ceballos et al. 2013 Chandonnet et al. 2013 Cross et al. 2016 Dye et al. 2021 EsquéRuiz et al. 2015 Hanley et al. 2022 Herbeć et al. 2020 Jain et al. 2023 Madrid-Aguilar et al. 2019 Manerkar et al. 2022 Maria et al. 2022 Sunkwa-Mills et al. 2020 Triantafillou et al. 2020 Trudel et al. 2018 Wilder et al. 2016	Ceballos et al. 2013 Erdei et al. 2015 Hanley et al. 2022 Hawes & Lee 2018 Herbeć et al. 2020 Pahwa et al. 2018 Stone et al. 2016 Stroeve et al. 2020 Sunkwa-Mills et al. 2020 Weiss et al. 2021
Compatibility	Barrett et al. 2023 Batthula et al. 2021 Biswas et al. 2019 Chandonnet et al. 2013 Cowden et al. 2020 Delaney Manthe et al. 2019	Aragona et al. 2021 Barrett et al. 2023 Maria et al. 2022 Morgan et al. 2018 Stone et al. 2016

	Barriers	Facilitators
	Fischer Fumeaux et al. 2017 Gon et al. 2021 Hanley et al. 2022 Herbeć et al. 2020 Jain et al. 2023 Manerkar et al. 2022 Maria et al. 2022 Morgan et al. 2018 Trudel et al. 2018 Weiss et al. 2021	
Culture	Bierlaire et al. 2021 Cowden et al. 2020 Herbeć et al. 2020 Triantafillou et al. 2020 Weiss et al. 2021	Dye et al. 2021 Erdei et al. 2015 Herbeć et al. 2020 Profit et al. 2017 Sunkwa-Mills et al. 2020 Weiss et al. 2021
Incentive Systems	Biswas et al. 2019 Cross et al. 2019 Dye et al. 2021 Gephart et al. 2021 Kumar et al. 2022 Salem & Youssef 2017 Sunkwa-Mills et al. 2020 Weiss et al. 2021	Dye et al. 2021 Erdei et al. 2015
Mission Alignment	Delaney Manthe et al. 2019	Dye et al. 2021 Erdei et al. 2015 Hawes & Lee 2018 Sunkwa-Mills et al. 2020 Zhou & Chen 2022
Relational Connections	EsquéRuiz et al. 2015 Jain et al. 2023 Madrid-Aguilar et al. 2019 Maria et al. 2022 Morgan et al. 2018	Azmeraw Getie et al. 2022 Barrett et al. 2023 Bezerra et al. 2021 Chandonnet et al. 2017 Dumpa et al. 2019 Erdei et al. 2015 Fisher et al. 2013

	Barriers	Facilitators
		Hanley et al. 2022 Hawes & Lee 2018 Herbeć et al. 2020 Maria et al. 2022 Morgan et al. 2018 Profit et al. 2017 Stone et al. 2016 Stroeve et al. 2020 Wilder et al. 2016
Relative Priority	Badparva et al. 2023 Cowden et al. 2020 Kumar et al. 2022 Song et al. 2013 Triantafillou et al. 2020 Wilder et al. 2016	Chandonnet et al. 2017 Hightower et al. 2022 López et al. 2013 Maria et al. 2022 Pharande et al. 2018 Pletsch et al. 2013 Sunkwa-Mills et al. 2020
Structural Characteristics	Alimohammadzadeh et al. 2017 Alrumi et al. 2020 Amaan et al. 2022 Badparva et al. 2023 Balla et al. 2018 Barrett et al. 2023 Batthula et al. 2021 Bharadwaj et al. 2019 Bierlaire et al. 2021 Biswas et al. 2019 Caspari et al. 2017 Ceballos et al. 2013 Chandonnet et al. 2013 Cowden et al. 2020 Cross et al. 2016 Cross et al. 2019 Dawczynski et al. 2017 Delaney Manthe et al. 2019 Deshommes et al. 2021 Dye et al. 2021	Azmeraw Getie et al. 2022 Chandonnet et al. 2017 Gephart et al. 2021 Hanley et al. 2022 Herbeć et al. 2020 Mahieu et al. 2022 Maria et al. 2022 Pletsch et al. 2013 Rai et al. 2021 Rojas Beytia et al. 2020 Stroeve et al. 2020 Sunkwa-Mills et al. 2020 Yawson & Hesse 2013 Zhou & Chen 2022

Barriers	Facilitators
EsquéRuiz et al. 2015	
Gephart et al. 2021	
Gon et al. 2017	
Gon et al. 2021	
Hanley et al. 2022	
Hawes & Lee 2018	
Hayashi et al. 2021	
Herbeć et al. 2020	
Hightower et al. 2022	
Jain et al. 2023	
Kallam et al. 2018	
Kumar et al. 2022	
Lauderbaugh et al. 2019	
López et al. 2013	
Madrid-Aguilar et al. 2019	
Mahieu et al. 2022	
Manerkar et al. 2022	
Manzo et al. 2022	
Maria et al. 2022	
Morgan et al. 2018	
Mukerji et al. 2013	
Oko et al. 2022	
Pasricha et al. 2021	
Rai et al. 2021	
Rogers et al. 2021	
Rojas Beytia et al. 2020	
Salem & Youssef 2017	
Simen-Kapeu et al. 2015	
Singh et al. 2021	
Song et al. 2013	
Stroeve et al. 2020	
Sunkwa-Mills et al. 2020	
Theron et al. 2022	
Thomas et al. 2019	
Triantafillou et al. 2020	
Trudel et al. 2018	

	Barriers	Facilitators
	Weiss et al. 2021 Wilder et al. 2016 Yawson & Hesse 2013	
Tension for Change		Chandonnet et al. 2017 Erdei et al. 2015 Herbeć et al. 2020 Howard-Jones et al. 2022 López et al. 2013 Weber 2016
Innovation		
Capability	Alimohammadzadeh et al. 2017 Alslaim et al. 2022 Amaan et al. 2022 Anderson 2016 Badparva et al. 2023 Balla et al. 2018 Barrett et al. 2023 Batthula et al. 2021 Bharadwaj et al. 2019 Biswas et al. 2019 Ceballos et al. 2013 Chandonnet et al. 2013 Cowden et al. 2020 Cross et al. 2016 Cross et al. 2019 Dye et al. 2021 EsquéRuiz et al. 2015 Fabbri et al. 2013 Gafirimbi et al. 2016 Gon et al. 2017 Gon et al. 2021 Hawes & Lee 2018 Hayashi et al. 2021 Herbeć et al. 2020 Jain et al. 2023	Anderson 2016 Azmeraw Getie et al. 2022 Batthula et al. 2021 Delaney Manthe et al. 2019 Dramowski et al. 2021 Gon et al. 2017 Zhou & Chen 2022

	Barriers	Facilitators
	Kumar et al. 2022 Lauderbaugh et al. 2019 López et al. 2013 Manerkar et al. 2022 Maria et al. 2022 McCord et al. 2019 Németh et al. 2022 Ngugi et al. 2019 Pasricha et al. 2021 Rai et al. 2021 Rogers et al. 2021 Singh et al. 2021 Song et al. 2013 Stroeve et al. 2020 Sunkwa-Mills et al. 2020 Theron et al. 2022 Triantafillou et al. 2020 Trudel et al. 2018 Weiss et al. 2021	
Motivation	Amaan et al. 2022 Aragona et al. 2021 Balla et al. 2018 Batthula et al. 2021 Bharadwaj et al. 2019 Biswas et al. 2019 Chandonnet et al. 2013 Cross et al. 2019 Fischer Fumeaux et al. 2017 Hanley et al. 2022 Herbeć et al. 2020 Hightower et al. 2022 Jain et al. 2023 Kumar et al. 2022 López et al. 2013 Madrid-Aguilar et al. 2019 Manerkar et al. 2022	Bezerra et al. 2021 Ceballos et al. 2013 Chandonnet et al. 2013 Chandonnet et al. 2017 Cross et al. 2016 Dramowski et al. 2021 Fischer Fumeaux et al. 2017 Gephart et al. 2021 Herbeć et al. 2020 Maria et al. 2022 Pletsch et al. 2013 Rai et al. 2021 Rojas Beytía et al. 2020 Ruch-Ross et al. 2014 Stone et al. 2016 Weiss et al. 2021 Zhou & Chen 2022

	Barriers	Facilitators
	Maria et al. 2022 Morgan et al. 2018 Pahwa et al. 2018 Pletsch et al. 2013 Rojas Beytia et al. 2020 Shettigar et al. 2021 Singh et al. 2021 Song et al. 2013	
Need	Bharadwaj et al. 2019 Hanley et al. 2022 Hightower et al. 2022 Manerkar et al. 2022 Mukerji et al. 2013 Rogers et al. 2021 Stroeve et al. 2020	Zhou & Chen 2022
Opportunity	Biswas et al. 2019 Herbeć et al. 2020 Jain et al. 2023 Manerkar et al. 2022 Maria et al. 2022 Morgan et al. 2018 Pahwa et al. 2018	Gephart et al. 2019 Sunkwa-Mills et al. 2020
Innovation		
Innovation Adaptability	Batthula et al. 2021 Hanley et al. 2022	Batthula et al. 2021 Morgan et al. 2018
Innovation Complexity	Hanley et al. 2022 Maria et al. 2022	Delaney Manthe et al. 2019
Innovation Costs	Kallam et al. 2018 Shettigar et al. 2021	López et al. 2013 Morgan et al. 2018 Pletsch et al. 2013 Somasekhara Aradhya et al. 2022 Umulisa et al. 2016
Innovation Evidence Base	Anderson 2016 Beekman & Steward 2020 Bowen et al. 2017	Anderson 2016 Cowden et al. 2020 Maria et al. 2022

	Barriers	Facilitators
	Jacobs Pepin et al. 2019 McCord et al. 2019 Pletsch et al. 2013 Weiss et al. 2021	
Innovation Relative Advantage		Cowden et al. 2020 Somasekhara Aradhya et al. 2022
Innovation Source	Anderson 2016	Bierlaire et al. 2021 Hanley et al. 2022

Implementation Strategies

Adapt and tailor to context

Promote adaptability

Batthula et al. 2021
 Bechmann et al. 2023
 Biswas et al. 2019
 Dramowski et al. 2021
 Fischer Fumeaux et al. 2017
 Fisher et al. 2013
 Gafirimbi et al. 2016
 Gon et al. 2021
 Hanley et al. 2022
 Hawes & Lee 2018
 Hightower et al. 2022
 Johnson et al. 2022
 Manerkar et al. 2022
 Parga et al. 2017

Weiss et al. 2021

Tailor strategies

Alimohammadzadeh et al. 2017
 Alshaikh et al. 2015
 Balachander et al. 2020
 Barrett et al. 2023
 Bowen et al. 2017
 Ceballos et al. 2013
 Chandonnet et al. 2017
 Dye et al. 2021
 Erdei et al. 2015
 Gafirimbi et al. 2016
 Hawes & Lee 2018
 Jacobs Pepin et al. 2019

Johnson et al. 2022
 Kallam et al. 2018
 Manerkar et al. 2022
 Maria et al. 2022
 Marofi et al. 2017
 Mwananyanda et al. 2019
 Rai et al. 2021
 Singh et al. 2021
 Trudel et al. 2018
 Umulisa et al. 2016
 Zhou et al. 2020

Use data warehousing techniques

Dye et al. 2021
 Rosenthal et al. 2013

Change Infrastructure

Change physical structure and equipment

Almeida et al. 2017
Alslaim et al. 2022
Arena et al. 2013
Balla et al. 2018
Barrett et al. 2023
Bharadwaj et al. 2019
Bierlaire et al. 2021
Bowen et al. 2017
Caspari et al. 2017
Ceballos et al. 2013
Chandonnet et al. 2013
Chandonnet et al. 2017
Cowden et al. 2020
Delaney Manthe et al. 2019
Deshommes et al. 2021
Dramowski et al. 2021
Dumpa et al. 2019
Erdei et al. 2015
EsquéRuiz et al. 2015
Fabbri et al. 2013
Ferry et al. 2020
Goodchild et al. 2018
Hamza et al. 2022
Hawes & Lee 2018
Hightower et al. 2022
Howard-Jones et al. 2022
Johnson et al. 2022
Kallam et al. 2018
Khurana et al. 2018
Kumar et al. 2022
Lauderbaugh et al. 2019
Lee et al. 2015

López et al. 2013
Maria et al. 2022
Marom et al. 2020
Mwananyanda et al. 2019
Pahwa et al. 2018
Pasricha et al. 2021
Patel et al. 2014
Phan et al. 2020
Pharande et al. 2018
Pletsch et al. 2013
Prashantha et al. 2019
Rai et al. 2021
Rosenthal et al. 2013
Shepherd et al. 2015
Shettigar et al. 2021
Singh et al. 2021
Somasekhara Aradhya et al. 2022
Song et al. 2013
Szél et al. 2017
Taryana et al. 2019
Thomas et al. 2019
Ting et al. 2013
Tsiatsiou et al. 2015
Umulisa et al. 2016
Zhou et al. 2020

Change record systems

Barrett et al. 2023
Bowen et al. 2017
Ceballos et al. 2013
Chandonnet et al. 2013
Delaney Manthe et al. 2019
Dye et al. 2021

Erdei et al. 2015
Fisher et al. 2013
García González et al. 2017
Gephart et al. 2021
Hayashi et al. 2021
Jain et al. 2023
Linam et al. 2019
Madrid-Aguilar et al. 2019
Manerkar et al. 2022
Pallotto et al. 2017
Piazza et al. 2016
Pletsch et al. 2013
Rogers et al. 2021
Rohsiswatmo et al. 2014
Rolnitsky et al. 2019
Sinha et al. 2016

Change service sites

Maria et al. 2022
Sinha et al. 2016
Song et al. 2013
Zhou et al. 2015

Create accreditation or membership requirements

Bharadwaj et al. 2019
Chandonnet et al. 2013
Mukerji et al. 2013
Pharande et al. 2018
Shettigar et al. 2021
Steiner et al. 2015
Tran et al. 2018
Zhou et al. 2015

Create or change credentialing and/or licensure standards

Alslaim et al. 2022
Azab et al. 2015
Balla et al. 2018
Batthula et al. 2021
Ceballos et al. 2013
Dramowski et al. 2021

Gephart et al. 2021
Hawes & Lee 2018
Hensel et al. 2017
Hightower et al. 2022
Kallam et al. 2018
Lauderbaugh et al. 2019
Wilder et al. 2016

Mandate change

Beekman & Steward 2020
Chandonnet et al. 2013
Dye et al. 2021
Gephart et al. 2021
Tran et al. 2018
Zachariah et al. 2014

Develop relationships

Build a coalition

Alrumi et al. 2020
Barrett et al. 2023
Cantey et al. 2013
Erdei et al. 2015
Hanley et al. 2022
López et al. 2013
Radbone et al. 2013

Capture and share local knowledge

Grover et al. 2015
Lee et al. 2015
Pallotto et al. 2017
Piazza et al. 2016
Zhou et al. 2020

Conduct local consensus discussions

Gafirimbi et al. 2016
Lee et al. 2015
Radbone et al. 2013
Ramos Ferreira Curan et al. 2017
Rolnitsky et al. 2019
Thakur et al. 2022

Develop academic partnerships

Marofi et al. 2017

Identify and prepare champions

Bharadwaj et al. 2019
Bowen et al. 2017
Ceballos et al. 2013
Dumpa et al. 2019
Dye et al. 2021
Erdei et al. 2015

Gon et al. 2021
Hayashi et al. 2021
Johnson et al. 2022
Kallam et al. 2018
Kumar et al. 2022
Madrid-Aguilar et al. 2019
Pharande et al. 2018
Prashantha et al. 2019
Quinones Cardona et al. 2021
Radbone et al. 2013
Tran et al. 2018
Weiss et al. 2021
Zhou et al. 2020

Involve executive boards

Barrett et al. 2023
Bowen et al. 2017
Delaney Manthe et al. 2019
Dye et al. 2021
Fisher et al. 2013
Howard-Jones et al. 2022
Hussain et al. 2021
Johnson et al. 2022
Kallam et al. 2018
Maria et al. 2022
Neill et al. 2016
Pharande et al. 2018
Radbone et al. 2013
Ramos Ferreira Curan et al. 2017
Rosenthal et al. 2013
Shepherd et al. 2015
Wilder et al. 2016

Model and simulate change

Hightower et al. 2022
Steiner et al. 2015

Organize clinician implementation meetings

Barrett et al. 2023
Bowen et al. 2017
Ceballos et al. 2013
Dumpa et al. 2019
Dye et al. 2021
Grover et al. 2015
Hawes & Lee 2018
Howard-Jones et al. 2022
Kallam et al. 2018
Neill et al. 2016
Pletsch et al. 2013
Ramos Ferreira Curan et al. 2017
Shepherd et al. 2015
Singh et al. 2021
Ting et al. 2013
Weiss et al. 2021
Wilder et al. 2016

Promote network weaving

Bowen et al. 2017
Chandonnet et al. 2017
Dumpa et al. 2019
Dye et al. 2021
Erdei et al. 2015
EsquéRuiz et al. 2015
Fisher et al. 2013
Grover et al. 2015
Hawes & Lee 2018

Hightower et al. 2022
Jacobs Pepin et al. 2019
Johnson et al. 2022
Pletsch et al. 2013
Radbone et al. 2013
Rolnitsky et al. 2019
Rosenthal et al. 2013
Shepherd et al. 2015
Taylor et al. 2017
Wilder et al. 2016

Promote/Lobby for interests

López et al. 2013

Recruit, designate, and train for leadership

Gephart et al. 2021
Hussain et al. 2021

Use advisory boards and workgroups

Alimohammadzadeh et al. 2017
Alshaikh et al. 2015
Balla et al. 2018
Barrett et al. 2023
Batthula et al. 2021
Bechmann et al. 2023
Bharadwaj et al. 2019
Cantey et al. 2013
Ceballos et al. 2013
Chandonnet et al. 2013

Delaney Manthe et al. 2019
Dye et al. 2021
Erdei et al. 2015
EsquéRuiz et al. 2015
Fernández-Prada et al. 2019
Fisher et al. 2013
Gafirimbí et al. 2016
Gephart et al. 2021
Goodchild et al. 2018
Hamza et al. 2022
Hanley et al. 2022
Hawes & Lee 2018
Hayashi et al. 2021
Howard-Jones et al. 2022
Jacobs Pepin et al. 2019
Johnson et al. 2022
Kallam et al. 2018
Kumar et al. 2022
Lauderbaugh et al. 2019
Lee et al. 2015
Linam et al. 2019
López et al. 2013
Manerkar et al. 2022
Maria et al. 2022
Neill et al. 2016
Pahwa et al. 2018
Patel et al. 2014
Pharande et al. 2018
Piazza et al. 2016

Radbone et al. 2013
Rai et al. 2021
Ramos Ferreira Curan et al. 2017
Rogers et al. 2021
Rolnitsky et al. 2019
Shettigar et al. 2021
Singh et al. 2021
Somasekhara Aradhya et al. 2022
Szél et al. 2017
Ting et al. 2013
Tran et al. 2018
Tsiatsiou et al. 2015
Wilder et al. 2016
Zhou et al. 2020

Use an implementation advisor

Howard-Jones et al. 2022
Maria et al. 2022
Marom et al. 2020
Pahwa et al. 2018
Pallotto et al. 2017
Piazza et al. 2016
Singh et al. 2021

Visit other sites

Dye et al. 2021
Gafirimbí et al. 2016
Pharande et al. 2018
Zhou et al. 2020

Engage Individuals

Involve patients/consumers and family members

Chandonnet et al. 2013
Dye et al. 2021
EsquéRuiz et al. 2015
Fernández-Prada et al. 2019
Fisher et al. 2013
Goodchild et al. 2018
Hawes & Lee 2018
Jain et al. 2023
Johnson et al. 2022
Maria et al. 2022
Marom et al. 2020
Neill et al. 2016

Pletsch et al. 2013
Ramos Ferreira Curan et al. 2017
Short 2019
Singh et al. 2021
Song et al. 2013
Zhou et al. 2020

Prepare patients/consumers to be active participants Erdei et al. 2015

Use mass media
Ceballos et al. 2013
EsquéRuiz et al. 2015

Gephart et al. 2021
Gon et al. 2021
Johnson et al. 2022
Lauderbaugh et al. 2019
Maria et al. 2022
Pallotto et al. 2017
Piazza et al. 2016
Radbone et al. 2013
Wilder et al. 2016
Zhou et al. 2020

Provide interactive assistance

Centralize technical assistance

Bharadwaj et al. 2019
Dye et al. 2021
Manerkar et al. 2022
Piazza et al. 2016

Facilitation

Batthula et al. 2021
Ceballos et al. 2013
Chandonnet et al. 2013
Gephart et al. 2021
Jain et al. 2023
Manerkar et al. 2022
Maria et al. 2022
Umulisa et al. 2016
Weiss et al. 2021

Provide clinical supervision

Balla et al. 2018
Biswas et al. 2019
Chandonnet et al. 2017
Gon et al. 2021
Grover et al. 2015
Tran et al. 2018
Umulisa et al. 2016

Provide local technical assistance

Balla et al. 2018
Ceballos et al. 2013
Delaney Manthe et al. 2019
Deshommes et al. 2021
Dye et al. 2021
Erdei et al. 2015
Fischer Fumeaux et al. 2017

Gephart et al. 2019
Hawes & Lee 2018
Hayashi et al. 2021
Hussain et al. 2021
Lee et al. 2015
López et al. 2013
Manerkar et al. 2022
Maria et al. 2022
Radbone et al. 2013
Sinha et al. 2016
Sunkwa-Mills et al. 2020
Tran et al. 2018
Zhou et al. 2015
Zhou et al. 2020

Support Individuals

Create new clinical teams

Bierlaire et al. 2021
Dye et al. 2021
Erdei et al. 2015
Ramos Ferreira Curan et al. 2017
Wilder et al. 2016
Zhou et al. 2015

Develop resource sharing agreements

Dye et al. 2021
Pletsch et al. 2013

Facilitate relay of clinical data to providers

Balla et al. 2018
Dye et al. 2021
Erdei et al. 2015
Grover et al. 2015
Hawes & Lee 2018
Hussain et al. 2021
Manerkar et al. 2022
Quinones Cardona et al. 2021

Hire new or additional staff

Hensel et al. 2017
Howard-Jones et al. 2022
Maria et al. 2022
Shepherd et al. 2015

Remind clinicians or other involved groups

Alslaim et al. 2022
Balla et al. 2018
Bharadwaj et al. 2019
Bowen et al. 2017
Ceballos et al. 2013
Chandonnet et al. 2017
Cowden et al. 2020
Deshommes et al. 2021
Dramowski et al. 2021
Ferry et al. 2020
Gephart et al. 2019
Goodchild et al. 2018
Hawes & Lee 2018
Hayashi et al. 2021
Hightower et al. 2022
Hussain et al. 2021
Johnson et al. 2022
Kallam et al. 2018
Kumar et al. 2022
Lauderbaugh et al. 2019
Linam et al. 2019
Mwananyanda et al. 2019
Ramos Ferreira Curan et al. 2017
Rosenthal et al. 2013
Shettigar et al. 2021

Somasekhara Aradhya et al. 2022
Thomas et al. 2019
Ting et al. 2013
Umulisa et al. 2016
Wilder et al. 2016
Zhou et al. 2015

Revise professional roles

Balla et al. 2018
Chandonnet et al. 2013
Erdei et al. 2015
Gafirimbibi et al. 2016
Hawes & Lee 2018
Hussain et al. 2021
Johnson et al. 2022
Khurana et al. 2018
Maria et al. 2022
Prashantha et al. 2019
Stone et al. 2016
Ting et al. 2013
Umulisa et al. 2016
Wilder et al. 2016

Train and educate

Conduct educational meetings or provide trainings

Almeida et al. 2017
 Alrumi et al. 2020
 Alshaikh et al. 2015
 Amaan et al. 2022
 Arena et al. 2013
 Azab et al. 2015
 Barrett et al. 2023
 Batthula et al. 2021
 Bechmann et al. 2023
 Bharadwaj et al. 2019
 Bierlaire et al. 2021
 Biswas et al. 2019
 Bowen et al. 2017
 Cantey et al. 2013
 Caspari et al. 2017
 Ceballos et al. 2013
 Chandonnet et al. 2013
 Chandonnet et al. 2017
 Delaney Manthe et al. 2019
 Deshommes et al. 2021
 Dramowski et al. 2021
 Dumpa et al. 2019
 Dye et al. 2021
 Erdei et al. 2015
 EsquéRuiz et al. 2015
 Fernández-Prada et al. 2019
 Fisher et al. 2013
 Gafirimbi et al. 2016
 García González et al. 2017
 Gephart et al. 2019
 Gephart et al. 2021
 Giuffrè et al. 2013

Goodchild et al. 2018
 Grover et al. 2015
 Hamza et al. 2022
 Hanley et al. 2022
 Hensel et al. 2017
 Hightower et al. 2022
 Howard-Jones et al. 2022
 Jacobs Pepin et al. 2019
 Jahan et al. 2022
 Jain et al. 2023
 Johnson et al. 2022
 Kallam et al. 2018
 Karabay et al. 2019
 Khurana et al. 2018
 Kumar et al. 2022
 Lauderbaugh et al. 2019
 Linam et al. 2019
 López et al. 2013
 Madrid-Aguilar et al. 2019
 Manerkar et al. 2022
 Maria et al. 2022
 Marom et al. 2020
 Mukerji et al. 2013
 Mwananyanda et al. 2019
 Neill et al. 2016
 Pallotto et al. 2017
 Parga et al. 2017
 Pasricha et al. 2021
 Patel et al. 2014
 Phan et al. 2018
 Phan et al. 2020
 Pharande et al. 2018
 Pletsch et al. 2013

Prashantha et al. 2019
 Quinones Cardona et al. 2021
 Radbone et al. 2013
 Rai et al. 2021
 Rogers et al. 2021
 Rolnitsky et al. 2019
 Rosenthal et al. 2013
 Sabry & Ibrahim 2021
 Sadeghi-Moghaddam et al. 2015
 Shettigar et al. 2021
 Singh et al. 2021
 Song et al. 2013
 Steiner et al. 2015
 Stone et al. 2016
 Szél et al. 2017
 Thakur et al. 2022
 Thomas et al. 2019
 Ting et al. 2013
 Tran et al. 2018
 Tsiatsiou et al. 2015
 Umulisa et al. 2016
 Van Rostenberghe et al. 2014
 Verma et al. 2017
 VillegasSánchez et al. 2014
 Weber 2016
 Weiss et al. 2021
 Wilder et al. 2016
 Zhou et al. 2015
 Zhou et al. 2020

Conduct educational outreach visits

Bowen et al. 2017
 Delaney Manthe et al. 2019

Pahwa et al. 2018
Prashantha et al. 2019
Zhou et al. 2015
Zhou et al. 2020

Conduct ongoing training

Balla et al. 2018
Bharadwaj et al. 2019
Cantey et al. 2013
Ceballos et al. 2013
Delaney Manthe et al. 2019
Dramowski et al. 2021
Dye et al. 2021
EsquéRuiz et al. 2015
Geraci et al. 2014
Grover et al. 2015
Howard-Jones et al. 2022
Jacobs Pepin et al. 2019
Mukerji et al. 2013
Neill et al. 2016
Németh et al. 2022
Pletsch et al. 2013
Rohsiswatmo et al. 2014
Rosenthal et al. 2013
Shettigar et al. 2021
Stone et al. 2016
Stroeve et al. 2020
Sunkwa-Mills et al. 2020
Taylor et al. 2017
Van Rostenberghe et al. 2014
Weber 2016
Zhou et al. 2015

Create a learning collaborative

Bowen et al. 2017
Fisher et al. 2013
Gephart et al. 2021
Grover et al. 2015
Hightower et al. 2022
Pallotto et al. 2017
Piazza et al. 2016
Stone et al. 2016

Develop educational materials

Almeida et al. 2017
Alshaikh et al. 2015
Batthula et al. 2021
Bowen et al. 2017
Cantey et al. 2013
Ceballos et al. 2013
Chandonnet et al. 2013
Chandonnet et al. 2017
Delaney Manthe et al. 2019
EsquéRuiz et al. 2015
Fernández-Prada et al. 2019
Fisher et al. 2013
Gafirimbi et al. 2016
García González et al. 2017
Gephart et al. 2021
Geraci et al. 2014
Goodchild et al. 2018
Grover et al. 2015
Hanley et al. 2022
Hawes & Lee 2018
Hightower et al. 2022
Howard-Jones et al. 2022
Jacobs Pepin et al. 2019

Johnson et al. 2022
Kallam et al. 2018
Lauderbaugh et al. 2019
Lee et al. 2015
López et al. 2013
Manerkar et al. 2022
Maria et al. 2022
Marofi et al. 2017
McCord et al. 2019
Mukerji et al. 2013
Neill et al. 2016
Pettit et al. 2017
Phan et al. 2020
Pharande et al. 2018
Prashantha et al. 2019
Radbone et al. 2013
Ramos Ferreira Curan et al. 2017
Rogers et al. 2021
Rohsiswatmo et al. 2014
Rolnitsky et al. 2019
Shettigar et al. 2021
Short 2019
Singh et al. 2021
Steiner et al. 2015
Szél et al. 2017
Tran et al. 2018
Van Rostenberghe et al. 2014
Verma et al. 2017
Zhou et al. 2020

Distribute educational materials

Alshaikh et al. 2015
Alslaim et al. 2022
Amaan et al. 2022

Balla et al. 2018
 Barrett et al. 2023
 Batthula et al. 2021
 Bharadwaj et al. 2019
 Bowen et al. 2017
 Cantey et al. 2013
 Caspari et al. 2017
 Ceballos et al. 2013
 Chandonnet et al. 2013
 Chandonnet et al. 2017
 Delaney Manthe et al. 2019
 Erdei et al. 2015
 EsquéRuiz et al. 2015
 Fernández-Prada et al. 2019
 Ferry et al. 2020
 Fisher et al. 2013
 Gafirimbi et al. 2016
 García González et al. 2017
 Gephart et al. 2021
 Gon et al. 2017
 Goodchild et al. 2018
 Gopalakrishnan et al. 2021
 Grover et al. 2015
 Hanley et al. 2022
 Hawes & Lee 2018
 Hayashi et al. 2021
 Howard-Jones et al. 2022
 Jacobs Pepin et al. 2019
 Johnson et al. 2022
 Khurana et al. 2018
 Kumar et al. 2022
 Lee et al. 2015
 Linam et al. 2019
 López et al. 2013

Manerkar et al. 2022
 Maria et al. 2022
 Marom et al. 2020
 Morgan et al. 2018
 Mukerji et al. 2013
 Mwananyanda et al. 2019
 Neill et al. 2016
 Parga et al. 2017
 Pasricha et al. 2021
 Patel et al. 2014
 Pettit et al. 2017
 Pharande et al. 2018
 Pletsch et al. 2013
 Prashantha et al. 2019
 Rai et al. 2021
 Ramos Ferreira Curan et al. 2017
 Rolnitsky et al. 2019
 Rosenthal et al. 2013
 Sabry & Ibrahim 2021
 Salem & Youssef 2017
 Saporito et al. 2021
 Shettigar et al. 2021
 Singh et al. 2021
 Sunkwa-Mills et al. 2020
 Szél et al. 2017
 Thomas et al. 2019
 Ting et al. 2013
 Zhou et al. 2020

Make training dynamic

Alrumi et al. 2020
 Alshaikh et al. 2015
 Amaan et al. 2022
 Balla et al. 2018

Batthula et al. 2021
 Bowen et al. 2017
 Chandonnet et al. 2017
 Delaney Manthe et al. 2019
 Dye et al. 2021
 Fisher et al. 2013
 Gephart et al. 2021
 Gopalakrishnan et al. 2021
 Grover et al. 2015
 Hawes & Lee 2018
 Hightower et al. 2022
 Jacobs Pepin et al. 2019
 Jahan et al. 2022
 Johnson et al. 2022
 Manerkar et al. 2022
 Maria et al. 2022
 Mwananyanda et al. 2019
 Németh et al. 2022
 Phan et al. 2018
 Phan et al. 2020
 Pletsch et al. 2013
 Ramos Ferreira Curan et al. 2017
 Shettigar et al. 2021
 Szél et al. 2017
 Tran et al. 2018
 Van Rostenberghe et al. 2014
 Verma et al. 2017
 Weiss et al. 2021

Provide ongoing consultation

Balachander et al. 2020
 Dye et al. 2021
 Johnson et al. 2022
 Maria et al. 2022

Morgan et al. 2018
Rosenthal et al. 2013

Update educational materials

Barrett et al. 2023
Batthula et al. 2021
Bharadwaj et al. 2019
Hayashi et al. 2021
Maria et al. 2022

Sinha et al. 2016

Use train-the-trainer strategies

Alshaikh et al. 2015
Dramowski et al. 2021
Dye et al. 2021
Hightower et al. 2022
Khurana et al. 2018
Lee et al. 2015

Manerkar et al. 2022
Sinha et al. 2016
Van Rostenberghe et al. 2014
Verma et al. 2017
Zhou et al. 2015
Zhou et al. 2020

Use evaluative and iterative strategies

Audit and provide feedback

Alrumi et al. 2020
 Alslaim et al. 2022
 Balachander et al. 2020
 Balla et al. 2018
 Barrett et al. 2023
 Bharadwaj et al. 2019
 Bierlaire et al. 2021
 Biswas et al. 2019
 Bowen et al. 2017
 Ceballos et al. 2013
 Chandonnet et al. 2017
 Dramowski et al. 2021
 Dye et al. 2021
 Erdei et al. 2015
 Fernández-Prada et al. 2019
 Gopalakrishnan et al. 2021
 Hamza et al. 2022
 Hawes & Lee 2018
 Hussain et al. 2021
 Jain et al. 2023
 Johnson et al. 2022
 Kallam et al. 2018
 Karabay et al. 2019
 Khurana et al. 2018
 Lauderbaugh et al. 2019
 Lee et al. 2015
 Linam et al. 2019
 Madrid-Aguilar et al. 2019
 Maria et al. 2022
 Marom et al. 2020
 Neill et al. 2016
 Phan et al. 2020

Pharande et al. 2018
 Radbone et al. 2013
 Rai et al. 2021
 Ramos Ferreira Curan et al. 2017
 Rosenthal et al. 2013
 Saporito et al. 2021
 Shepherd et al. 2015
 Shettigar et al. 2021
 Sinha et al. 2016
 Somasekhara Aradhya et al. 2022
 Stone et al. 2016
 Szél et al. 2017
 Taylor et al. 2017
 Ting et al. 2013
 Van Rostenberghe et al. 2014
 Weber 2016
 Wilder et al. 2016

Conduct cyclical small test of change

Alshaikh et al. 2015
 Balla et al. 2018
 Barrett et al. 2023
 Batthula et al. 2021
 Bharadwaj et al. 2019
 Bierlaire et al. 2021
 Ceballos et al. 2013
 Grover et al. 2015
 Hayashi et al. 2021
 Hightower et al. 2022
 Jain et al. 2023
 Khurana et al. 2018
 Kumar et al. 2022
 Linam et al. 2019

Manerkar et al. 2022
 Pahwa et al. 2018
 Patel et al. 2014
 Piazza et al. 2016
 Pletsch et al. 2013
 Quinones Cardona et al. 2021
 Rai et al. 2021
 Rolnitsky et al. 2019
 Shettigar et al. 2021
 Singh et al. 2021
 Somasekhara Aradhya et al. 2022
 Stone et al. 2016
 Ting et al. 2013

Conduct local needs assessment

Alimohammadzadeh et al. 2017
 Azab et al. 2015
 Balla et al. 2018
 Barrett et al. 2023
 Batthula et al. 2021
 Bharadwaj et al. 2019
 Bierlaire et al. 2021
 Biswas et al. 2019
 Ceballos et al. 2013
 Chandonnet et al. 2013
 Dye et al. 2021
 Erdei et al. 2015
 EsquéRuiz et al. 2015
 Gafrimbi et al. 2016
 Gon et al. 2021
 Goodchild et al. 2018
 Grover et al. 2015
 Hawes & Lee 2018

Hayashi et al. 2021
 Jacobs Pepin et al. 2019
 Jain et al. 2023
 Johnson et al. 2022
 Kallam et al. 2018
 Khurana et al. 2018
 Kumar et al. 2022
 Linam et al. 2019
 López et al. 2013
 Manerkar et al. 2022
 Németh et al. 2022
 Patel et al. 2014
 Prashantha et al. 2019
 Rai et al. 2021
 Ramos Ferreira Curan et al. 2017
 Rogers et al. 2021
 Shettigar et al. 2021
 Somasekhara Aradhya et al. 2022
 Song et al. 2013
 Steiner et al. 2015
 Ting et al. 2013
 Weber 2016
 Wilder et al. 2016
 Zhou et al. 2020

Develop a formal implementation blueprint

Chandonnet et al. 2013
 Chandonnet et al. 2017
 Delaney Manthe et al. 2019
 Fisher et al. 2013
 Gafirimbi et al. 2016
 Grover et al. 2015
 Manerkar et al. 2022
 Piazza et al. 2016

Prashantha et al. 2019
 Somasekhara Aradhya et al. 2022

Develop and implement tools for quality monitoring

Barrett et al. 2023
 Hawes & Lee 2018
 Khurana et al. 2018
 Maria et al. 2022
 Pahwa et al. 2018
 Patel et al. 2014
 Ramos Ferreira Curan et al. 2017

Develop and organize quality monitoring systems

Alshaikh et al. 2015
 Arena et al. 2013
 Balachander et al. 2020
 Balla et al. 2018
 Barrett et al. 2023
 Bechmann et al. 2023
 Bharadwaj et al. 2019
 Bierlaire et al. 2021
 Bowen et al. 2017
 Cantey et al. 2013
 Caspari et al. 2017
 Ceballos et al. 2013
 Chandonnet et al. 2013
 Chandonnet et al. 2017
 Delaney Manthe et al. 2019
 Dramowski et al. 2021
 Dye et al. 2021
 Erdei et al. 2015
 Fabbri et al. 2013
 Gajic et al. 2021
 García González et al. 2017

Gephart et al. 2019
 Goodchild et al. 2018
 Gopalakrishnan et al. 2021
 Hawes & Lee 2018
 Hayashi et al. 2021
 Howard-Jones et al. 2022
 Hussain et al. 2021
 Jahan et al. 2022
 Jain et al. 2023
 Johnson et al. 2022
 Kallam et al. 2018
 Karabay et al. 2019
 Khurana et al. 2018
 Kumar et al. 2022
 Linam et al. 2019
 López et al. 2013
 Mahieu et al. 2022
 Maria et al. 2022
 Németh et al. 2022
 Pallotto et al. 2017
 Piazza et al. 2016
 Prashantha et al. 2019
 Rohsiswatmo et al. 2014
 Rosenthal et al. 2013
 Sabry & Ibrahim 2021
 Salem & Youssef 2017
 Shepherd et al. 2015
 Somasekhara Aradhya et al. 2022
 Szél et al. 2017
 Taryana et al. 2019
 Taylor et al. 2017
 Ting et al. 2013
 Tran et al. 2018
 Tsiatsiou et al. 2015

Wilder et al. 2016

Zhou et al. 2015

Obtain and use patients/consumers and family feedback

Alimohammadzadeh et al. 2017

Barrett et al. 2023

Batthula et al. 2021

Bharadwaj et al. 2019

Caspari et al. 2017

Ceballos et al. 2013

Delaney Manthe et al. 2019

Dramowski et al. 2021

EsquéRuiz et al. 2015

Fabbri et al. 2013

Gafirimbi et al. 2016

Gephart et al. 2021

Goodchild et al. 2018

Hawes & Lee 2018

Khurana et al. 2018

Manerkar et al. 2022

Maria et al. 2022

Patel et al. 2014

Prashantha et al. 2019

Radbone et al. 2013

Ramos Ferreira Curan et al. 2017

Shettigar et al. 2021

Ting et al. 2013

Tran et al. 2018

Trudel et al. 2018

Purposefully reexamine the implementation

Alrumi et al. 2020

Balachander et al. 2020

Balla et al. 2018

Barrett et al. 2023

Batthula et al. 2021

Bharadwaj et al. 2019

Biswas et al. 2019

Ceballos et al. 2013

Chandonnet et al. 2017

Dumpa et al. 2019

Dye et al. 2021

Erdei et al. 2015

Fabbri et al. 2013

Fernández-Prada et al. 2019

Grover et al. 2015

Hawes & Lee 2018

Hightower et al. 2022

Howard-Jones et al. 2022

Jacobs Pepin et al. 2019

Jain et al. 2023

Johnson et al. 2022

Kallam et al. 2018

Maria et al. 2022

Neill et al. 2016

Pahwa et al. 2018

Pallotto et al. 2017

Patel et al. 2014

Quinones Cardona et al. 2021

Ramos Ferreira Curan et al. 2017

Rohsiswatmo et al. 2014

Rolnitsky et al. 2019

Sinha et al. 2016

Somasekhara Aradhya et al. 2022

Steiner et al. 2015

Tsiatsiou et al. 2015

Wilder et al. 2016

Stage implementation scale up

Alshaikh et al. 2015

Azab et al. 2015

Barrett et al. 2023

Caspari et al. 2017

Erdei et al. 2015

Gephart et al. 2021

Gon et al. 2021

Hamza et al. 2022

Jacobs Pepin et al. 2019

Linam et al. 2019

Madrid-Aguilar et al. 2019

Parga et al. 2017

Rolnitsky et al. 2019

Somasekhara Aradhya et al. 2022

Steiner et al. 2015

Thomas et al. 2019

Verma et al. 2017

Update tools/systems for quality monitoring

Almeida et al. 2017

Balla et al. 2018

Barrett et al. 2023

Chandonnet et al. 2013

Erdei et al. 2015

EsquéRuiz et al. 2015

Hayashi et al. 2021

Maria et al. 2022

Patel et al. 2014

Saporito et al. 2021

Szél et al. 2017

Ting et al. 2013

Weber 2016

Wilder et al. 2016

Utilize financial/incentivizing strategies

Access new funding

Dye et al. 2021

Sinha et al. 2016

Alter incentive/allowance structures

Bowen et al. 2017

Ceballos et al. 2013

Dye et al. 2021

Erdei et al. 2015

EsquéRuiz et al. 2015

Gephart et al. 2021

Goodchild et al. 2018

Gopalakrishnan et al. 2021

Hanley et al. 2022

Hawes & Lee 2018

Herbeć et al. 2020

Hussain et al. 2021

Johnson et al. 2022

Lauderbaugh et al. 2019

Maria et al. 2022

Marofi et al. 2017

Pharande et al. 2018

Rohsiswatmo et al. 2014

Shepherd et al. 2015

Van Rostenberghe et al. 2014

Wilder et al. 2016

Place innovation on fee for service lists/formularies

Delaney Manthe et al. 2019

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