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| Reference | Year | Source | Country | Name of the Intervention (e.g., WHO Surgical Checklist, QARISMA) | No. of hospitals involved (N) |
|---|---|---|---|---|---|
| | 2018 | Database search | | African Surgical Unit-based Safety Programme (based on WHO guidelines) | |
| Allegranzi B, Aiken AM, Zeynep K | | | Kenya, Uganda, Zimba | | 5 |
| Bayley MT, Hurdowar A, Richards | 2012 | Database search | Canada | The Stroke Canada Optimization of Rehabilitation by Evidence project (SCORE project) | 5 stroke rehab centres |
| Borchert M, Goufodji S, Alihonou | 2012 | Database search | Benin, W Africa | Obstetric near-miss case reviews | 5 |
| Brink AJ, Messina AP, Maslo C, et | 2020 | Database search | South Africa | Hand hygiene informed by Cochrane reviews | 50 |
| Cameron M, Jones S, Adedeji O. / | 2015 | Database search | UK | Traffic light antibiotic prophylaxis poster based on Scottish Intercollegiate Guidelines Network guidelines | 3 |
| Cima R, Dankbar E, Lovely J, Penc | 2013 | Database search | USA | American College of Surgeons National Surgical Quality Improvement Program: rsulting in multiple interventions around SSI prevention | 1 (but part of a national program) |
| Cresswell K, Morrison Z, Crowe S, | 2011 | Database search | UK | Lorenzo software | 4 'early adopter' sites |
| Cuypers M, Al-Itejawi HHM, van I | 2019 | Database search | Netherlands | International Patient Decision Aids Standards (IPDAS) | 33 |
| de Groot JJ, Maessen JM, Slanger | 2015 | Database search | Netherlands | Enhanced Recovery After Surgery but studying implementation strategies: breakthrough versus stepped | Protocol - not given |
| Dekker-van Doorn C, Wauben L, v | 2020 | Database search | Netherlands | Time out procedure and debriefing in Operating theatres | 10 |

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| Author | Year | Method | Country | Intervention | N |
|---|---|---|---|---|---|
| Dumont, A., P. Fournier, M. Abra | 2013 | Database search | Senegal and Mali | QUARITE (quality of care, risk management, and technology in obstetrics) trial | 46 |
| Edward, K. L., K. Walker and J. Du | 2017 | Database search | Australia | Translating Research into Practice implementation model. | 9 |
| Forchuk, C., M. L. Martin, E. Jens | 2013 | Database search | Canada | The transitional relationship model (TRM) | 6 |
| Foy, R., G. C. Penney, J. M. Grims | 2004 | Database search | Scotland | Tailored multi facteted strategy delivered by Scottish Programme for Clinical Effectiveness inReproductive Health | 26 (all hospital gyanecology units in Scotland) |
| Fuller, C., S. Michie, J. Savage, J. N | 2012 | Database search | England and Wales | The Feedback Intervention Trial (FIT) of a national cleanyourhands campaign | 16 trusts (60 wards) |
| Grazioli, V. S., J. C. Moullin, M. Ka | 2019 | Database search | Switzerland | Case Management of frequent users of Emergency departments | Not specied but over a large Canton |
| Havers, S. M., P. L. Russo, K. Page | 2019 | Database search | Australia | Aseptic technique policy | Not stated |
| Haynes, A. B., L. Edmondson, S. R | 2017 | Database search | USA | A customized version of the WHO Surgical Safety Checklist - part of the Safe Surgery South Carolina program | 14/58 |
| Hendy, J., N. Fulop, B. C. Reeves, | 2007 | Database search | UK | NHS information and technology (IT) programme | 4 Trusts /all in UK |
| Keller, H. H., R. Valaitis, C. V. Laur | 2019 | Database search | Canada | More-2-Eat project | 5 |

| | | | | |
|---|---|---|---|---|
| Kotagal, U. R., J. M. Robbins, N. M | 2002 | Database search | USA | Bronchiolitis clinical practice guidelines | 11 |
| Kourouche, S., T. Buckley, C. Van, | 2019 | Database search | Australia | Blunt chest injury care bundle | 2 |
| Luxton et al 2014, Caring letters f | 2014 | Database search | USA | Caring Letters | 6 Defence department hospitals with acute psych units |
| Maguire et al 2016, Evaluating th | 2016 | Database search | USA | National disclosure policy after adverse events developed by Veterans' Affairs | All 150 VA administered hospitals |
| Makene, et al 2014 Improvement | 2014 | Database search | Africa | Several interventions for newborns and maternal health | 251 facilities; 52 in evaluation |

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| | | | | |
|---|---|---|---|---|
| Mansoori et al 2012 Picture Arch | 2012 | Database search | USA | Picture Archiving and Communication System (PACS) | four specialty hospitals, six additional community hospitals, and in all associated outpatient clinics |
| Marcus RK, Lillemoe HA, Rice DC, | 2019 | Database search | USA | Enhanced Recovery Protocols | One - across multiple oncology specialties |
| McCreight MS, Lambert-Kerzner | 2019 | Database search | USA | Anti-platelet therapy adherence | 20 VA medical centres |
| McFarland MS, Thomas AM, You | 2020 | Database search | USA | Pharmacist-to-Pharmacist Transitions of Care Initiative | 2 VA medical centers, 18 community-based outpatient clinics |
| McNeely J, Troxel AB, Kunins HV, | 2019 | Database search | USA | Consult for Addiction Treatment and Care in Hospitals (CATCH) | 6 |

| | | | | |
|---|---|---|---|---|
| | 2019 | Database search | | Anaesthetists Be Cleaner |
| Merry AF, Gargiulo DA, Bissett I, | | | New Zealamd | |
| | 2016 | Database search | | Safe Surgery 2015 initiative to implement SSCs in South Carolina hospitals |
| Molina G, Jiang W, Edmondson L, | | | USA | |
| Monico LB, Oros M, Smith S, Mit | 2020 | Database search | USA | Screening, Brief Intervention, and Referral to Treatment (SBIRT) |
| | 2014 | Database search | | Mobilization of Vulnerable Elders in Ontario (MOVE ON) |
| Moore, J. E., A. Mascarenhas, C. I | | | Canada | |
| | 2012 | Database search | | The Productive Ward: Releasing Time to Caree programme |
| Morrow, E., G. Robert, J. Maben | | | UK | |
| Mudge, A. M., M. D. Banks, A. G. | 2017 | Database search | Australia | Eat Walk Engage |
| | 2016 | Database search | | Period ofPURPLE Crying: Keeping Babies Safe in North Carolina, |
| Nocera, M., M. Shanahan, R. A. N | | | USA | |
| | 2013 | Database search | | The Bacteremia Zero study |
| Palomar, M., F. Alvarez-Lerma, A | | | Spain | |
| Pronovost, P. (2008). "Interventi | 2008 | Database search | USA | The Keystone Intensive Care Unit Project |

| |
|---|
| 5 hospitals x 5 departments |
| 67 (reporting on 13) |
| 24 EDs |
| 26 hospital units |
| |
| 5 |
| 4 |
| |
| 86 |
| |
| 192 ICUs |
| 108 ICUs |

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| Author | Year | | Country | Title | N |
|---|---|---|---|---|---|
| Pronovost, P., D. Needham, S. Be | 2006 | Database search | USA | The Keystone Intensive Care Unit Project | 109 ICUs |
| Pun, B. T., S. M. Gordon, J. F. Pet | 2005 | Database search | USA | Society of Critical Care Medicine guidelines re sedation and monitoring | 2 |
| Reames BN, Krell RW, Campbell D | 2015 | Database search | USA | Keystone Surgery Program | 29 |
| Schwarzkopf, D., H. Ruddel, M. G | 2018 | Database search | Germany | German Quality Network Sepsis | 75 |
| Schweizer, M. L., H. Y. Chiang, E. | 2015 | Database search | USA | Study to Optimally Prevent Surgical Site Iinfections in Select Cardiac and Orthopedic Procedures (STOP SSI) | 20 |
| Stolldorf, D. P., J. L. Schnipper, A. | 2019 | Database search | USA | Multi-Centre Medication Reconciliation Quality Improvement Study (MARQUIS2). | 18 |
| Terkola R, Czejka M, Berube J. Ev | 2017 | Database search | Europe | Gravimetric workflow software systems | 10 pharmacy services in 5 European countries |
| Toltzis, P., M. O'Riordan, D. J. Cui | 2014 | Database search | USA | Pediatric surgical site infection prevention bundle | 18 |

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| | | | | One large cancer centre across 18 tumour types |
|---|---|---|---|---|
| | 2018 | Database search | | |
| van Harten WH, Goedbloed N, Bc | | | Netherlands | Fast track cancer diagnostics |
| | 2018 | Database search | | Michigan Surgical Quality Collaborative (MSQC) Surgical Site Infection bundle |
| Vu JV, Collins SD, Seese E, Hendre | | | USA | 52 |
| Wand, T., C. Crawford, N. Bell, M | 2019 | Database search | Australia | Mental health model of Care for patient in ED — 3 |
| Wyld, L., S. Smith, N. J. Hawkins, | 2014 | Database search | Australia | Institutional biobanking — 2 |

**Additional papers using Organistional Readiness Theory**

| Zapka, J., K. Simpson, L. Hiott, L. I | 2013 | | USA | Telemedicine outreach service for underserved rural hospitals — 4 |
|---|---|---|---|---|
| Sharma, N., J. Herrnschmidt, V. C | 2018 | | Switzerland | Matching Registered Nurse Services with Changing Care Demands — 23 |
| Rees, G. H. (2014). "Organisation | 2014 | | New Zealand | Lean thinking initiative — 3 |

**Website search**

| ACI Redesign | https://acl health.nsw | Australia | See supplemenatary file 3 |
|---|---|---|---|
| Advance care planning | w.canada.c | Canada | |
| NHMRC Implementation Guideline | w.nhmrc.g | Australia | |
| NHS NICE Chronic heart failure | w.nice.org. | UK | |
| WHO Surgical Checklist | w.who.int/ | Global | |

| How is it characterised by the authors? (National, multisite, policy /research /trial /package/ directive/ priority | Source of the intervention I=developed in-house by the team implementing it; E=developed | Evidence of local adaptation? Y; N | Initiative funding: E=external funding; I=internal funding; | External Support e.g., researchers from Universit | Formal Internal Support for the project (e.g., | Formal outcome measures collected. Y;N | Evidence of System Change (e.g., new forms, new IT, new | Any mention of active de-implementation of usual care | Any mention of adaptabilit y? Or ownership? |
|---|---|---|---|---|---|---|---|---|---|
| multimodal infection control intervention / a mult | E | Y | E | Y | Y | Y | | N | Y |
| a pilot implementation study across 5 diverse sites | E | Y | Not stated | Y | Y | Y | Not really | N | Y |
| a quality assurance intervention suitable for hospi | E | Y | E | Y | Y | Y | Y | N | Y |
| a five-phase multi-faceted HH management system | E | Y | I | Y | Y | Y | Y | N | Some |
| Intervention | E | Y | R | Y | Y - implied | Y | Y poster | N | N |
| nationally validated system that uses clinically abs | E | Y | Not stated | Y | Y | Y | Y - resource | Y new proce | Y - more QI |
| the implementation of Lorenzo as a complex type | E | N | E | N | Y | Y | Y | Not reporte | All tight |
| multi-regional implementation | E | Y | E, R | Y | Not reporte | Y | Y | N | Y - some neg |
| multi-regional implementation | E | Protocol | I | Y | Y | Y | protocol | protocol | Y |
| multi-site study using participatory action research | E | Y | Not stated | Y | Y | Y | Yes | Yes some | Y |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| multifaceted intervention / a cluster-randomised 1 | E | Y | I/R | Y | Y | Y | Y | N | N |
| Trial of the implementation intervention: addressi | E | Y | E, R | Y | Y | Y | Y | Not reporte | Y |
| quasi-experimental testing of implementation of 1 | E | Y | R | Y | Y | Y | Y | Not reporte | Y |
| a tailored multifaceted strategy implementa=ing g | E | Y | R | Y | Y | Y | N | N | Y |
| Three year stepped wedge cluster RCT of a feedba | E | Y | I/R | Y | Y | Y | Y | N | N |
| effectiveness-implementation hybrid trial | E | Protocol | R | Y | Y | Y | Protocol | Protocol | Protocol |
| the implementation of aseptic technique policy re | E | N | I | N | Y- implied it | Y | Y | N | N |
| The Safe Surgery 2015 South Carolina program | E | Y | E | Y | Y | Y | Y | Not reporte | Y |
| the largest civilian IT programme in the world | E | N | E | Y | Y | Y | Y | Surprisingly | N |
| implementation of an evidence-based nutrition ca | E | Y | E | Y | Y | Y | Y | No | Y |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| multisite implementation of an evidence-based cli | E | Y | Not reporte | Y | Y | Y | Y | N | Y |
| implementation of a blunt chest injury care bundl | E | Y | R | Y | Y - implied | Not reporte | Y | N | Y |
| National trial/ research | E | N | R | Y | Y | Y | Y, new emai | N | N |
| National policy | E | N | I | N | Y | Y | Y new proce | N | Learning ho |
| large-scale quality improvement intervention | E | Y | E | Y | Y | Y | Y, new equi| Y | Y - each faci |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Multisite implementation | E | Y | I | Y | Y | Y | Y; IT, proces | Y | N |
| multispecialty implementation of ER protocols at ¿ | E | Not clear | R,I, E | Y | Y | Y | Y , processe | N | N |
| multi-site randomized stepped wedge trial to test | E | N | R, I | Y | Y | Y | Y, processes | N | N (CT) |
| large-scale pharmacist-to-pharmacist TOC model ȷ | E | N | R, I | Y | Y | Y | Y, processes | N | N |
| pragmatic trial at six hospitals; program | E | N | R, I | Y | Y | Y | Y - extensive | N | N |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| an evidence-based bundle, stepped wedge, cluste | E | Y | E | Y | Y | Y | Y, processes | N | Y |
| state-wide/ large-scale implementation of surgical | E | Y | E | Y | Y | not reporte | Y checklist | N | Not reporte |
| a state-wide effort in Maryland to expand SBIRT in | E | N | E | Y | Y | Y | Y screening | N | N |
| a multi-site implementation intervention in acute | E | Y | I, E, R | Y | Y | Not reporte | Y | N | Y |
| large-scale quality improvement | E | Y | Mixed | Y | Y | Y | Y | Y | Y |
| a multi-site improvement program | E | Y | I, E, R | Y | Y | Y | Y | Protocol | Y |
| statewide nurse training program | E | N | Mixed | Y | Y | Y | Y | N | N |
| national mulitmodal intervention | E | Y | Mixed | Y | Y | Y | Y | N | Y |
| statewide quality improvement initiative | E | Y | Not clear | Y | Y | Y | Y | N | Y |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| statewide quality improvement initiative | E | Y | Not clear | Y | Y | Y | Y | N | Y |
| a process-improvement project | E | N | R, I | Y | Y | Y | Y | N | N |
| Statewide, checklist-based quality improvement in E | | Y | I | Y | Y | Y | Y | Y - checklist | Yes - local a |
| a quality collaborative | E | Y | I/E | Y | Y | Y | Y | N | N |
| the multisite pragmatic trial | E | Y | I | Y | Y | Y | Y | N | Y |
| patient safety strategy that is widespread in US hc E | | y | I/E | Y | Y | Y | Y | N | N |
| a large-scale, multicentre, multinational | E | N | Not clear | Not report | Y | Y | Y new softw | Y | Not reporte |
| A quality improvement collaboration in Ohio com E | | Y | I/E | Y | Y | Y | Y | N | N |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Large scale implementation | E | Y | I | Y | Y | Y | Y: new processes, new equipment | | |
| a "bundle" of care processes | E | Y | I | Y | Y | Y | Y | Not reporte | N |
| multi-site translation research project to impleme | E | Y | I/R | Y | Y | Y | NA pre-impl | N | Y |
| modern, large-scale research initiative | E | Y | I/R | Y | Y | Y | Y | N | Y |
| academic-clinician partnership | E | Y | E | Y | Y, N | Y | NA pre-impl | N | Y |
| a cross-sectional multicentre study | E | N | E | Y | Y | Y | Y | N | N |
| Lean management philosophy and activities | E | Y | E | Y | Y | Y | Y | N | N |

| Implementation strategies, frameworks named / discussed? | Implementation Strategies |
|---|---|
| Comprehensive Unit-based Safety Programme developed in the USA, is a five-step iterative process | Formation of implementation teams to oversee; senior executive sponsorship; clinical leads; education; audit and feedback; assess safety culture; accountabiity for senior staff and leaders; tools to improve communication; expertise and mentorship from the US experts. |
| No | Local facilitator - clinician; salary support for 1 day/week; education and gap analysis; |
| Some | Audit and case review; paid clinical lead for the audits; Multidisciplinary Team |
| Yes - Ubuntu pholisphy 'I am what I am because of who we all are' to promote ownership | Targeted activities for different groups (eg exec vs clinical); audit and feedback; education/retraining; resources such as alcohol rub |
| Yes - based on poor knowledge of extent of SSI - not well reported across UK. | Audit and feedback x 2; education as part of M&M meeting; posters |
| Lean Six Sigma | Multidisciplinary Teams, literature review and process mapping; work flow analysis to standardise practice; audit and feedback (using a mulit-institutional data set); new resources; education; Community of Practice |
| Yes - developing a framework for how to engage clinical staff | Boundary spanner/ clinical champions; national champions |
| Barriers | Discussion of fitting into workflow |
| The Model for Planning Change . | Education, PDSA cycles, audits, process audits, cost effectiveness, digital tool; opinion leaders; outreach visit |
| Adaptive Design | Education and successive learning cycles; including all professionals, monitoring. |

| | |
|---|---|
| Yes | Developing opinion leaders; undertaking educational clinically-oriented, and evidence-based outreach visits focused on emergency obstetric care; clinical audits (maternal death reviews) |
| Healthcare Improvement Collaborative Model (HICM) based on Provonost and Johns Hosplins Implementation models. Really a QI process. | PDSA, audit and Feedback, Education, workshops, CoP team support, champions, and expert advisors, map processes, barriers analysis and mitigation strategy, online support and discussion boards, baseline audit. |
| Yes at length - make their own Evidence-Based strategy. | Education, on-site champions, supportive documentation systems |
| Yes theory-based analysis of barriers to implementation of guidelines | Audit and feedback, unit educational meetings, dissemination of structured case records and promotion of a patient information booklet. |
| Yes | Observational audit then constructive feedback and planning for improvement; audit and feedback at ward meetings, education for auditers. |
| The Generic Implementation Framework and RE-AIM to evaluate | Needs and interest assessment, hospital orientation / engagement with research support team, intervention toolkit, imp team, coaching, education |
| Lack of strategies discussed at length. Assessed using CFIR | Focus on barriers |
| Yes | Executive sponsorship/engagement with the state-wide collective, coaching, teleconferences, site visits, promotional materials, implementation "leadership" team. |
| Staged implementation of components, support from Central IT service - focus here is on what didn't happen. | Hospital exec engagement, clinical leadership, support from external experts, harnessing tension for change, |
| COM-B analysis, PDSA, sudit and feedback, MD imp Teams, clinical leaders/champions; engaing senior management | implementation team, audit and feedback, champions, senior management "educated" by champions, education, externalk support |

Yes

Hosp exec engaged to sponsor project, resources shared, support from
TRN collaborative, education, project coordinator, physician champion.

Only in terms of barriers / enablers using TDF and COM-B

Education, CPGs available,

Mostly based on pilot study

Clear process to follow, education, coaching, exec sponsorship, clear
objectives

Analysis of barriers using CFIR

Not reported

No

Observational audits of quality of care, education and skills assessment,
coaching, external support, provision/help in sourcing equipment

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| | |
|---|---|
| Yes | Consideration of physical infrastructure supporting the IT upgrade (the intervention); training offered at multiple times and through multiple formats -webinar/face to face/written , champions, implementation team with ckear responsibilities and roles; comprehensive communication plan; problem solving by imp team |
| No | Not reported |
| Yes | <span style="color:green">Readiness for change analysis, clinical champions, clear guidelines to follow</span> |
| No | Not reported |
| Not clear | Not reported |

| | |
|---|---|
| Yes - Table 1 shows their set of IS informed principles. | Education: presentations, written material and illustrative videos; co-designed bundle of interventions (so clinicians implementing the bundle have ownership), collection of outcome data; engage senior leadership, clinical champions. building a tension for change, ensuring all interventions"make sense "and are compatible with current workflow, "once intervention has been agreed, compliance should not be negotiable". |
| Yes | Needs analysis/context mapping at start; education; tools to do the intervention; multidisciplinary engagement |
| No | Not reported |
| Yes mapped to context and barriers analysis with TDF | Education, staff coaching tools, printed education materials, reminders, huddles, posters etc. |
| Yes - based on Diffusion of Innovation | Establishing a clear vision, success stories from "early adopters", regional level support for education and planning, alignment of program with organisational targets, dedicated project leadership, senior support, external support, dedicated project time for staff, good communication, and information, establishing a need for change, valuing the initiative, access to modules, voluntary enrolment in the project, sufficient resources, local ownership emphasised. |
| integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) framework | Facilitator works with MDT to prioritise areas for improvement, PDSA, project officer. Education |
| Kirkpatrick's typology | offered resources free of charge, diffusion of the course via senior clinicians involved in a regional education network, MOU with exec outlining the program/participation, resources and staff to be freed to do program. Education |
| Yes "engage, educate, execute and evaluate" | Engaged clinicians during meetings etc, audit and feedback via an online tool, other tools, education, problem solving, analsysis of errors |
| Yes "engage, educate, execute and evaluate" | Clinician change agents on each ICU, trained and shown the evidence for the/need for change/ |

| | |
|---|---|
| Yes "engage, educate, execute and evaluate" | Engage: personally communicate, tell stories and share results from other sites; educate - including skills, Execute: given skills on managing behaviour of others / themselves, streamlining processes, checklists; Evaluate: fidelity checked. |
| A four-phase implementation process incorporated a planning phase, baseline phase, education phase, and maintenance phase | baseline assessment; utilization of existing personnel (e.g., nurse educators, unit managers, charge nurses); education in the form of lectures, posters, and one-on-one reminders; and evaluation of compliance and impact |
| Provonost et al's "translating evidence into practice" model and Comprehensive Unit-based Safety Program (CUSP) | Education, collaboration, imp teams; interventions aimed at increased safety knowledge and culture |
| Yes | Audit and feedback, collaborative - benchmarking, responding to audits, link between collaborative and local clinical champions, education, engage exec - must pay an annual particpation fee and publication of hospital mortality, expert advice |
| N | not reported |
| Yes - Framework used to evaluate factors that may have influenced implementation. Not always clear what the implementation at each site was. | MD implementation teams, leadership support, |
| No | Not reported |
| Yes | common goal for improvement, engage and educate multidisciplinary teams and senior leaders, simplify and standardize care (bundles, protocols, policies, and briefings), ollect data and offer performance feedback, and to provide opportunities for shared learning |

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Elements from lean management, theory of constraints and mathematical analysis

Clinical leadership; executive sponsorship; audit and feedback; process mapping/analysis; predefined plan with project officers; inventory of barriers and facilitators; PDSA cycles to tweak the processes; active involevement of clinicians; external input from consultants to benchmark.

Promoted by a regional quality improvement collaborative

audit-andfeedback system for adherence, face-to-face meetings, and support for quality improvement projects at participating hospitals

Realistic evaluation of the pre-implementation

Engage with each site, assess willingness for change, identify resources required and flag potential barriers.

Analysis of barriers

Implementation team, clinical leadership, no extra resources/time given, case for change clear especially to patients

Organisational Readiness Theory

Organisational Readiness assessment

Organisational Readiness Theory

Organisational Readiness assessment

Organisational Readiness Theory

Organisational Readiness exploration