



Development of a Competency Framework for Clinical Effectiveness Education

University College Cork

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The Clinical Effectiveness Unit, of the National Patient Safety Office, for the National Clinical Effectiveness Committee, on the advice of its Education and Training Subcommittee.

Clinical effectiveness is a key component of patient safety and quality. The integration of best evidence in service provision, through clinical effectiveness processes, promotes healthcare that is up to date, effective and consistent.

National Clinical Effectiveness Committee (NCEC)

The National Clinical Effectiveness Committee (NCEC) is a Ministerial committee established in 2010 as part of the Patient Safety First Initiative. The NCEC is supported by the Clinical Effectiveness Unit (CEU), Department of Health. The NCEC is a partnership between key stakeholders in patient safety and its mission is to provide a framework for national endorsement of evidence-based clinical guidelines and audit to optimise patient and service-user care.

The NCEC has a subgroup on clinical effectiveness education and training to:

- Guide the development of multidisciplinary education in clinical effectiveness
- Liaise with postgraduate and undergraduate educational organisations to identify mutual goals and areas of interest relevant to clinical effectiveness and evidence-based practice
- Make recommendations to the NCEC regarding training and education in clinical effectiveness.

As part of the work of this subgroup, invitations to tender were issued in October 2017 and a public procurement competition held for the conduct of research into the development of a competency framework for clinical effectiveness education in Ireland.

Further information on the NPSO and NCEC and copies of this report are available at:

www.health.gov.ie/patient-safety/ncec

This report should be referenced as follows:

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Contents

Contents	3
List of Figures	5
List of Tables.....	6
List of Abbreviations.....	7
Acknowledgements.....	9
Executive summary	11
Chapter 1- Background.....	19
1. Introduction.....	19
1.1 Context.....	19
1.2 Project Aims and Objectives.....	21
1.3 Overall Project Management	21
1.4 Project Report Structure	23
Chapter 2 - Consolidation report	25
2.1 Current Requirements of Irish Health Regulators/Accreditation bodies - Clinical Effectiveness.25	
2.1.1 Observations from National Regulatory/Accreditation Body Requirements.....	28
2.2 NCEC Education Fora.....	29
2.2.1 Observations and Recommendations from NCEC Education Forum Meetings.....	30
2.3 National Research on Evidence Based Practice Education	31
2.3.1 Research on Teaching of Evidence Based Practice in Ireland – to Health and social care professionals and students (2017)	31
2.3.2 Survey of Teaching EBP (Forum of Postgraduate Medical Training Bodies)	33
Table 6 Perceived helpfulness of strategies for teaching EBP	38
2.3.3 Observations/Recommendations from Research conducted on EBP Education in Ireland ..	38
2.4 Scoping review	39
2.4.1 Introduction.....	39
2.4.2 Review methods.....	40
2.4.3 Findings- Empirical literature.....	44
2.4.4 Findings- Grey literature.....	49
2.4.5 Scoping Review Findings Synthesis and Key Observations	52
2.5 Data Integration	54
Chapter 3. Stakeholder Consultation and Engagement in Development of Competency Framework.....	57
3.1 Introduction.....	57
3.2 Competency development consultation focus groups.....	57
3.2.1 Aims.....	57
3.2.2 Procedures	57
3.2.3 Findings of consultation with focus groups	59
3.2.4 General feedback on draft framework	61
3.2.5 Domain Specific Feedback.....	62
Chapter 4. Competency Framework for Clinical Effectiveness Education	68
4.1 Introduction and Background.....	68
4.2 Competency framework development process	68
4.3 Framework Purpose	70

4.4 Underpinning principles	70
4.5 Framework Structure	72
4.6 Description of Competency Domains	72
4.6.1 Domain 1. Evidence Based Practice.....	74
.....	76
4.6.2 Domain 2. Quality Improvement processes	76
4.6.3 Domain 3. Implementation of clinical effectiveness into practice.....	78
4.6.4 Domain 4. Collaborative Practice in the context of Clinical Effectiveness	79
4.7 Applying the framework.....	80
Overall Report Conclusions	84
References	88
Appendix 1. Regulatory body requirements.....	92
Appendix 2. NCEC Education Forum (2016)	97
Appendix 3. NCEC Education Forum (2017)	102
Appendix 4. Empirical literature search strategy	107
Appendix 5. Grey literature search strategy.....	108
Appendix 6. Data extraction table- empirical literature	109
Appendix 7. Data extraction table- grey literature.....	112
Appendix 8. Consultation Information leaflet	114
Appendix 9. Background Information Questionnaire	115
Appendix 10. Consent form.....	117
Appendix 11. Topic guide	118
Appendix 12. Draft 1 Clinical Effectiveness Domain Competencies.....	119
Appendix 13. Stakeholders contacted for consultation groups	124
Appendix 14. Recommendations of focus groups.....	127

List of Figures

Figure 1 Proposed Clinical Effectiveness Education Framework	17
Figure 2 Development of a competency framework project work-package flow.....	21
Figure 3 Percentage of time allocated to EBP teaching method (P/G) (n= 9).....	35
Figure 4 Percentage of time allocated to EBP teaching method (CPD) (n=5).....	36
Figure 5 PRISMA flow diagram	43
Figure 6 Combined word frequencies for Clinical Effectiveness Education in all selected papers	45
Figure 7 Summary box (Empirical literature).....	49
Figure 8 Combined word frequencies for clinical effectiveness education in all selected findings	50
Figure 9 Summary box (Grey literature).....	52
Figure 10 Competency Development Framework Process.....	69

List of Tables

Table 1 Work package (WP) objectives, methods and target outcomes	22
Table 2 Response Rate to EBP Survey (Forum of Postgraduate Medical Training Bodies)	34
Table 3 Staff involved in the formal teaching of EBP (postgraduate level)	34
Table 4 Students'/trainees' participation in educational activities in areas of clinical effectiveness	36
Table 5 Perceived significance of named barriers to EBP Teaching.....	37
Table 6 Perceived helpfulness of strategies for teaching EBP	38
Table 7 PCC framework for article selection process	40
Table 8 Competencies for clinical effectiveness (Empirical Literature)	47
Table 9 Competencies for clinical effectiveness (Grey Literature)	51
Table 10 Consultation group(s) profile	60

List of Abbreviations

CATs- Critically Appraised Topics

CBE- Competency Based Education

CE- Continuing Education

CEU- Clinical Effectiveness Unit

CINAHL- Cumulative Index to Nursing and Allied Health Literature

CORU- Health and Social Care Professionals Council

CPD- Continuing Professional Development

DCU- Dublin City University

DoH- Department of Health

EBP- Evidence Based Practice

EBSCO- Elton B. Stephens Co database

EPPI- Centre- Evidence for policy and Practice Information and Co-ordinating Centre

FPHM- The Faculty of Public Health Medicine

GATECAT - Graphic Appraisal Tool for Epidemiological studies

GDC- General Dental Council

GMC- General Medical Council

HCPC- Health and Care Professions Council

HEA- Higher Education Authority

HIQA- Health Information and Quality Authority

HPRA- Health Products Regulatory Authority

HRB- Health Research Board

HRSA- Health Resources and Services Administration

HSE- Health Service Executive

ICGP- Irish College of General Practitioners

ICO- Irish College of Ophthalmologists

IIOF- Irish Institute of Pharmacy

IS- Implementation Science

ISCP- Irish Society of Chartered Physiotherapists

JBI- Joanna Briggs Institute

NCEC- National Clinical Effectiveness Committee

NICE- National Institute for Health and Care Excellence

NIH- National Institutes of Health

NMBI- Nursing and Midwifery Board of Ireland

NMC- Nursing and Midwifery Council

NPSO- National Patient Safety Office

OSCEs- Observed Structured Clinical Examinations

PCC- Participants, Concept and Context

PICO- framework used to develop literature search strategies. The acronym stands for. P – Patient, problem or population. I – intervention. C – Comparison, control or comparator, O-Outcomes

PRISMA- Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PSI- Pharmaceutical Society of Ireland

QI- Quality Improvement

QQI- Quality and Qualifications Ireland

QSEN- Quality and Safety Education for Nurses

RCSI- Royal College of Surgeons in Ireland

RMP- Risk Management Plan

SREC- Social Research Ethics Committee

TCD- Trinity College Dublin

UCC- University College Cork

UCD- University College Dublin

UNDP- United Nations Development Programme

WHO- World Health Organisation

WP- Work Package

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Executive summary

Executive summary

Background

Clinical effectiveness is a fundamental approach to improving patient safety and quality in health service delivery and promotes healthcare that is up to date, effective and efficient⁽¹⁾. It requires the integration of best evidence into service provision through clinical effectiveness processes, including; evidence-based practice, clinical guidelines, clinical practice guidance, implementation science and clinical audit⁽²⁾. To ensure that future health service users receive such care it is recommended that health and social care professions incorporate the necessary knowledge, skills and attitudes encompassed within clinical effectiveness processes into their professional education programmes and registration requirements⁽²⁾.

The acquisition of competencies for the application of clinical effectiveness in practice begins during an individual's professional training. To this end, health professional education programmes across the life-long learning continuum must be designed to target such competencies⁽²⁾. A competency framework can assist education and service providers to develop curricula by making clear the precise knowledge and skills needed in order to provide care⁽³⁾. Competency frameworks promote the alignment of competencies with appropriate learning activities and subsequent assessment to verify that learners have attained the requisite competence for their professional role⁽⁴⁾.

The development of a competency framework for clinical effectiveness education in Ireland is required to ensure that education standards and curricula for health and social care professionals are responsive to evidence-based practice, which is necessary for the provision of clinically effective and safe care. The National Patient Safety Office (NPSO) provides leadership with regard to patient safety policy, legislation and oversight in the Republic of Ireland. The NPSO has 3 key streams – *clinical effectiveness*, patient safety surveillance and patient advocacy and policy⁽¹⁾. The commissioning of this project by the NPSO is a strategic step, not only to inform academic curricula and professional development programmes, but also to embed a clinical effectiveness culture within healthcare services to promote high quality and safe care. Key outcomes of this project therefore will be:

- The development of a competency framework for clinical effectiveness to ensure the education standards and curricula of health and social care professionals (third level undergraduate, postgraduate and continuous professional development) are responsive to evidence-based practice to ensure care is clinically effective and safe.
- To produce a report for the NCEC for dissemination to Irish statutory health regulators and educators (academic and clinical), to inform professional standards for registration courses and continuous professional development of health and social care professionals in Ireland.

- To build capacity among health and social care professionals in line with the NCEC's clinical effectiveness agenda

Aims

As specified by the Department of Health National Patient Safety Office, the project aim was to:

Develop a competency framework for clinical effectiveness education in Ireland.

Objectives were to:

1. Develop a global competency framework for clinical effectiveness education for 3rd level health and social care professionals (undergraduate and postgraduate multidiscipline) working in various healthcare settings.
2. Develop core competencies (standards of proficiency) for clinical effectiveness linked to learning outcomes, to provide guidance to HEIs, academic and clinician educators.
3. Explore and identify (if possible) delivery modes that training programme(s) could use to develop the knowledge, skills and competencies required by all relevant stakeholders.
4. Recommend appropriate training pathways, experience and skill-set for teachers of EBP, Implementation science and clinical effectiveness in general.
5. Recommend methods of assessment for the core competencies for clinical effectiveness education for health and social care professionals, aligned with learning outcomes (individual and course level).

Methods

To meet the project aims and objectives, the following phases of research were conducted.

Phase 1 – Consolidation Report

A document analysis was undertaken to collate and synthesize the outcomes of recent national and international research in relation to competencies, core curriculum, learning outcomes, teaching and assessment of clinical effectiveness. Documents included were;

- The 2017 national report on “Research on Teaching of Evidence Based Practice in Ireland across Health and Social Care Professionals and Healthcare Students Research”⁽⁵⁾.
- The international consensus statement on core EBP concepts⁽⁶⁾.
- NCEC postgraduate education forum outcome reports^(7, 8).
- Current requirements of Irish health regulators in relation to education standards, competencies, curricula, learning outcomes, assessment and teaching of clinical effectiveness⁽⁹⁻²¹⁾.

- Scoping review of international literature on existing relevant clinical effectiveness education and competency frameworks.

Phase 2 - Stakeholder Consultation and Engagement

A key component of the framework's development was full engagement and consultation with stakeholders and experts across the healthcare, regulatory and education sectors. Thirteen consultation focus groups were conducted in May and June 2018 to elucidate varied perspectives on clinical effectiveness education competencies for health and social care professionals. Invited stakeholders included:

- Representatives of Higher Education Institutes, National University of Ireland Recognised Colleges, and Institutes of Technology that offer undergraduate and postgraduate health and social care profession education courses (medicine, nursing, midwifery, dentistry, pharmacy, physiotherapy, occupational therapy, speech and language therapy, podiatry and radiography).
- Professional training, regulatory and accreditation bodies across the professions e.g. Nursing and Midwifery Board of Ireland, Pharmaceutical Society of Ireland, CORU - Regulating Health and Social Care Professionals, the Irish College of General Practitioners and the Medical Council.
- Members of the National Clinical Effectiveness Committee (NCEC), NCEC sub-groups and participants of the National Clinical Effectiveness Education fora (2016 and 2017).
- Representatives from the Health Service Executive, HIQA, HEA, HRB, QQI, Patient/Service Users.

Note-based analysis, guided by an iterative constant comparison method⁽²²⁾, was employed and included analysis of notes from the focus groups, the debriefing session and summary comments from the moderator.

Phase 3 - Refinement of Proposed Clinical Effectiveness Education Competency Framework

The integration of key outcomes from Phases 1 and 2, in addition to feedback from the NCEC subgroup on Education and Training on the penultimate draft resulted in the refinement and presentation of a proposed competency framework for clinical effectiveness education.

Key Findings

Phase 1 – Consolidation Report

The evidence collated offered some consistent trends which addressed the following components of clinical effectiveness education:

- (1) Competency frameworks and indicative core competencies;
- (2) Curriculum considerations;
- (3) Regulatory/Accreditation body professional/educational standards;
- (4) Teaching, learning and assessment methods for clinical effectiveness education.

(1) Competency Frameworks and Indicative Core Competencies for Clinical Effectiveness Education

There was no evidence of competency frameworks (or guidance documents) pertaining specifically or explicitly to clinical effectiveness education. Competency frameworks describing individual core components of Clinical Effectiveness, in particular EBP, were evident. The international literature focused on the need for clinical effectiveness competencies to focus on EBP, quality improvement processes and implementation science strategies. Related competencies, which addressed the need for effective communication, collaborative practice and leadership, were also prevalent within the literature. Repeated reference to patient/service user engagement and expertise as central to clinical effectiveness processes was prominent across all data sources.

(2) Curriculum Considerations

The explicit integration of clinical effectiveness competencies throughout academic and clinical learning domains of health professional curricula was recommended. The incorporation of educational theories, in particular adult learning principles, mapping tools and scaffolding of competency acquisition according to prior learning experiences, was deemed valuable in structuring curricula overall to facilitate meaningful integration of clinical effectiveness. The creation of frequent and valued opportunities for students and practitioners to engage in the application of clinical effectiveness processes in practice was also recommended.

(3) Regulatory/Accreditation Body Professional/Educational Standards

Explicit reference to the term 'Clinical Effectiveness' was not evident from the review of the documents published by regulatory bodies in Ireland. However, reference to the core components of EBP and quality improvement were stated as essential within professional standards and requirements. This points to implicit recognition by regulatory bodies of the concept of clinical effectiveness through clear

statements regarding expected performance in these core areas for the delivery of safe and effective health services.

(4) Teaching, learning and assessment methods

Recommended teaching, learning and assessment strategies for clinical effectiveness education included:

- An interprofessional focus to teaching and delivering the core common components of clinical effectiveness education across undergraduate, postgraduate and CPD programmes.
- The use of clinically contextualised, interactive and multi-modal teaching and learning strategies that are perceived as relevant to learners.
- The development and application of teaching strategies according to educational level and/or prior experience of clinically effective practice.
- Use of teaching and active learning strategies such as mentoring/role modelling, enquiry and problem-based learning.
- The use of a wide range of validated assessment strategies that can accurately assess competency attainment to promote a consistent evaluation of learning outcomes.
- Use of inter-professional approaches including peer and self-assessment for appraisal of clinical effectiveness learning activities in practice.

The integration and synthesis of data from these key international and national sources led to the generation of a draft competency framework. Four competency domains for clinical effectiveness education were proposed as a result of the consolidation report and included:

- (1) Evidence Based Practice (EBP);
- (2) Quality improvement processes;
- (3) Implementation strategies;
- (4) Professional practice.

Phase 2 - Stakeholder Consultation and Engagement

In total, 13 focus groups were held with 45 participants (3-4 per group). Participants were presented with a draft of the proposed competency framework and asked for feedback. Fourteen health and social care professions were represented in addition to the following stakeholders: professional body organisations and regulators; advisors/specialists in quality improvement (HSE), clinical effectiveness (DoH) and patient safety, research and guideline programme managers, healthcare policy-makers (DoH), the HPRA- Health Products Regulatory Authority and HIQA - Health Information and Quality

Authority. The roles of participants varied, with the majority involved in either the provision of education to students/trainees within a third level institution or oversight/regulation/standard setting for student/trainee education.

Overall, participants found the framework relevant, appropriate and important for developing workforce capacity in clinical effectiveness and were satisfied that the domains reflected the core competencies for clinical effectiveness education overall. Participants agreed with the structure of the framework as presented at the consultation sessions. Recommendations were made to 'sense-check' the framework to three key existing national health and education publications namely:

- (1) The Implementation Guide and Toolkit for National Clinical Guidelines⁽²³⁾;
- (2) The Framework for Improving Quality in our Health Service⁽²⁴⁾;
- (3) The Framework for Public Involvement in Clinical Effectiveness Processes⁽²⁵⁾.

In addition, principles underpinning the framework and respective applications were suggested. Specific feedback for each competency domain was also analysed resulting in a number of amendments, which predominantly related to:

- Clarity of terminology;
- Sequencing of competency indicators;
- Use of appropriate measurable action verbs for competency indicators;
- Competency orientation or 'voice' i.e. individual vs. collective.

Feedback on teaching and learning modes of delivery for clinical effectiveness education emphasised the need for interprofessional education and the application of adult learning theory principles. It was recommended that teaching and assessment approaches should vary depending on the level of the programme (undergraduate, postgraduate, CPD), duration of the course and the learner's prior experience of clinically effective processes. The most reported recommended teaching methods were based on an active learning approach and included: group-based projects; role play/modelling; simulations and case-based studies that aid learners to apply and relate theory to practice. Recommended assessment methods varied. Self-assessment and self-reflection were noted as integral parts of assessment in aiding the development of active learning. The use of multi-source and '360' assessments were highlighted as providing valuable and constructive feedback on a number of professional learning activities. It was contended that health and social care professionals need to be supported to self-assess their abilities against the competency standards relevant to their role to determine areas in which further development is needed.

Phase 3 - Refinement of Proposed Clinical Effectiveness Education Competency Framework

Further integration of the outcomes of Phases 1 and 2, in addition to feedback from the NCEC on the penultimate draft, resulted in a proposed competency framework for clinical effectiveness education (see Figure 1). The report of the framework in Chapter 4 presents: (1) Framework purposes; (2) Underpinning principles; (3) Framework structure; (4) Description of Competency Domains; and (5) Framework Applications.



Figure 1 Proposed Clinical Effectiveness Education Competency Framework

Conclusion

A competency framework for clinical effectiveness education for health and social care professionals is proposed. It is intended that this framework will provide guidance to healthcare educators and regulators in the blueprinting of curricula, learning outcomes, assessment strategies, and graduate/clinician attributes. The dissemination of this report to Irish statutory health regulators and educators (academic and clinical) serves to build capacity among health and social care professionals, in line with the NCEC clinical effectiveness agenda, and ensure that education standards and curricula are responsive to evidence based practice to deliver care that is clinically effective and safe.

Chapter 1- Background

Chapter 1- Background

1. Introduction

The National Patient Safety Office (NPSO) provides leadership with regard to patient safety policy, legislation and oversight in the Republic of Ireland. The NPSO has 3 key streams – clinical effectiveness, patient safety surveillance and patient advocacy and policy⁽²⁶⁾. Clinical effectiveness promotes healthcare that is up to date, effective and efficient. It requires the integration of best evidence in service provision through clinical effectiveness processes, including, evidence-based practice, clinical guidelines, clinical practice guidance, implementation science and clinical audit⁽²⁷⁾.

The development of a competency framework for clinical effectiveness education in Ireland is required to ensure that education standards and curricula for health and social care professionals are responsive to evidence-based practice which is necessary for the provision of clinically effective and safe care. The key outcome of this project therefore will be the proposal of a competency framework for clinical effectiveness education for use by Irish statutory health regulators and educators (academic and clinical), to inform standards for registration courses and continuous professional development programmes of health and social care students and professionals.

1.1 Context

Clinical effectiveness is defined as: “the application of the best knowledge, derived from research, clinical experience and patient preferences to achieve optimum processes and outcomes of care for patients. It aims to make clinical practice more explicitly evidence based, with the goal of improving the effectiveness of clinical practice and service delivery⁽²⁸⁾. The process involves a framework of informing, changing and monitoring practice⁽²⁹⁾. It is about doing the right thing, in the right way, at the right time for the right patient and is concerned with demonstrating improvements in quality and performance:

- the right thing (evidence-based practice requires that decisions about healthcare are based on the best available, current, valid and reliable evidence).
- in the right way (developing a workforce that is skilled and competent to deliver the care required).
- at the right time (accessible services providing treatment when the patient needs them).
- in the right place (location of treatment/services).
- with the right outcome (clinical effectiveness/maximising health gain)⁽³⁰⁾.

The directive for promoting clinical effectiveness stems from the need to achieve the following: (1) improved patient experience of care; (2) improved health of populations; and (3) reduced per capita cost of healthcare⁽²⁶⁾. To highlight and advance the clinical effectiveness and evidence-based practice agendas, the Institute of Medicine (IOM) set a goal that by 2020, 90% of clinical decisions will be

supported by accurate, timely and up to date clinical information and will reflect the best available evidence to achieve the best patient outcomes⁽²⁷⁾. To ensure that future health service users receive such care, it is recommended that health and social care professions incorporate the necessary knowledge, skills and attitudes encompassed within clinical effectiveness processes into their professional education programmes and registration requirements.

The acquisition of competencies for the application of clinical effectiveness in practice begins during an individual's professional training. To this end, health professional education programmes across the life-long learning continuum, must be designed to target such competencies⁽²⁾. A competency framework can assist education and service providers to develop curricula which provides clinically relevant and standardised content for programmes of study by making clear the precise knowledge and skills needed in order to provide care⁽³⁾. Competency frameworks promote the alignment of competencies with appropriate learning activities and subsequent assessment to verify that learners have attained the requisite competence for their professional role⁽⁴⁾.

Competency Based Education (CBE) is widely used in both the regulation of practice and curricular design in health and social care professional education. In recent years CBE for health and social care professionals has been promoted across the European Union⁽³¹⁾. Some well-known examples include "Tomorrow's Doctors"⁽³²⁾; the CANMEDS Competency Framework⁽³³⁾, and the Palliative Care Competency Framework⁽³⁴⁾. However, CBE is not without its critics. It is contended that competency is not synonymous with competence and that competency models which use criterion-referenced approaches do not encourage the "deep and reflective" engagement required during professional practice-based learning⁽³⁵⁾. Other cited problematic areas in the operationalization of competence include assessment and measurement of clinical competence, general versus specific competence and divergent values among multiple stakeholders in developing competencies. Despite these challenges, it is recognised that competency frameworks, if well developed and contextualized, have much to offer educators in planning how best to support health and social care professionals to develop the attributes required of them to ensure effective and efficient care^(34, 36).

Clinical effectiveness is a fundamental approach to improving patient safety and quality in health service delivery⁽¹⁾. The commissioning of this project is a strategic step, not only to inform academic curricula and professional development programmes, but also to embed a clinical effectiveness culture within healthcare services to promote high quality and safe care.

1.2 Project Aims and Objectives

As specified by the Department of Health National Patient Safety Office, the aim of this project is to develop a competency framework for clinical effectiveness education in Ireland. Objectives of this research include:

1. Develop a competency framework for clinical effectiveness education for health and social care professionals working in various healthcare settings.
2. To inform academic curricula and professional development programmes at third level.
3. Provide a guide for attainment of knowledge, skills and attributes/behaviours for health and social care professionals.

1.3 Overall Project Management

To meet the project aim and objectives, five interrelated work packages (WP) were undertaken (Figure 2).

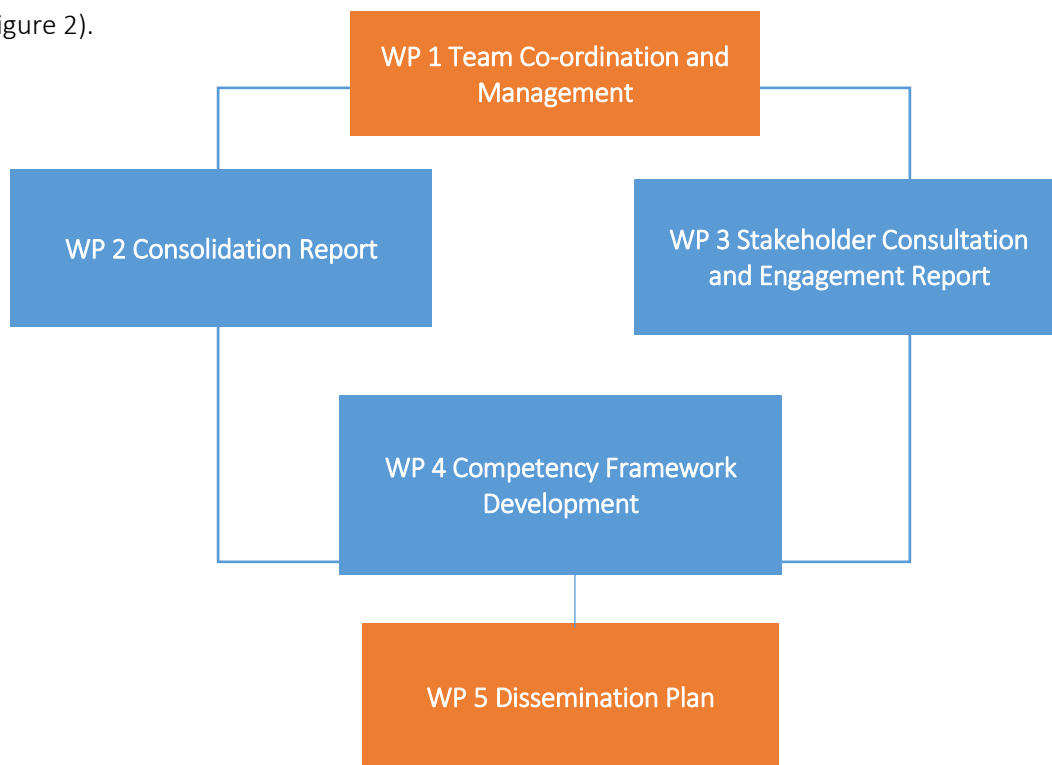


Figure 2 Development of a competency framework project work-package flow

The following table outlines each work-package objective, method(s) used to achieve the specified objective and associated target outcome(s).

Table 1 Work package (WP) objectives, methods and target outcomes

WP	Objectives	Methods	Target Outcome(s)
WP 1	<ul style="list-style-type: none"> To ensure project is completed within the required timeframe, whilst ensuring appropriate governance and high-quality processes and outcomes. 	<ul style="list-style-type: none"> Risk Management Plan (RMP). Communication Strategy. Financial Oversight. 	<ul style="list-style-type: none"> Appropriate governance and high-quality processes and outcomes. Project delivered within timeframe.
WP 2	<ul style="list-style-type: none"> To review international literature on existing relevant education and competency frameworks in relation to Clinical Effectiveness education. To summarise the outcomes of recent national and international research in relation to competencies, curriculum considerations, teaching/learning and assessment methods of clinical effectiveness. To present the current requirements of Irish health regulators in relation to clinical effectiveness education (or components therein). To capture data relating to the provision, practice and variation of EBP specific to the Forum of Irish Postgraduate Medical Training Bodies. 	<ul style="list-style-type: none"> Scoping review of empirical and grey literature on clinical effectiveness education competency frameworks. Document analysis of national health and social care professional regulator guidance documents and education standards in relation to clinical effectiveness. Document analysis of national NCEC forum proceedings. Survey methods with subsequent aggregation of findings from national EBP education surveys in relation to competencies, curriculum considerations, teaching/learning and assessment methods in EBP education. 	<p>Consolidation Report to include:</p> <ul style="list-style-type: none"> Completed scoping review. Table of Regulator/Current Requirements for professional bodies. Report of the 2nd NCEC Education Forum (2017) EBP Survey Findings (2017/18). Data integration of above named data sources.
WP 3	<ul style="list-style-type: none"> To consult with defined stakeholders in the competency framework development process. 	<ul style="list-style-type: none"> Focus group consultation across health and social care professions within education, regulatory and professional sectors. 	<ul style="list-style-type: none"> Report on stakeholder's recommendations for competency framework.
WP 4	<ul style="list-style-type: none"> To develop competency framework draft. 	<ul style="list-style-type: none"> Data integration. 	<ul style="list-style-type: none"> Draft of Competency Framework.
WP 5	<ul style="list-style-type: none"> To submit a final report to the DoH Clinical Effectiveness Unit and operationalise a clear dissemination and knowledge exchange plan. 	<ul style="list-style-type: none"> Drafting of report. Feedback consultation with project team and NPSO. 	<ul style="list-style-type: none"> Final report outlining recommendation for national competency framework for clinical effectiveness education. Presentation and publication strategy.

1.4 Project Report Structure

This report is comprised of 4 chapters. Following on from this introduction, Chapter 2 presents the methods and results of the consolidation report. Chapter 3 details the methods and findings of the stakeholder's consultation in the competency framework development process. Chapter 4 presents the competency framework for clinical effectiveness education and closes with reference to main conclusions and key future recommendations.

Chapter 2- Consolidation report

Chapter 2 - Consolidation report

This consolidation report provides a synthesis of national and international recommendations for core competencies and curriculum considerations, in addition to teaching and assessment methods of clinical effectiveness. Key observations from a number of data sources were collated, including:

- Current requirements of Irish professional regulatory bodies in relation to clinical effectiveness (Please see Appendix 1).
- The 2017 national report on “Research on Teaching of Evidence Based Practice in Ireland across Health and Social care professionals and students”⁽⁵⁾.
- National Clinical Effectiveness Committee (NCEC) Education forum reports (2016/2017)^(1, 8).
- A scoping review on competency frameworks for clinical effectiveness education including the international consensus statement on core EBP concepts⁽⁶⁾.

These data sources were integrated to produce this consolidation report, the output of which is an evidence-based, proposed competency framework for Clinical Effectiveness Education for health and social care professionals in Ireland.

2.1 Current Requirements of Irish Health Regulators/Accreditation bodies - Clinical Effectiveness

Regulation is used in healthcare to influence the behaviour of healthcare organisations⁽³⁷⁾. Professional regulation has the purpose of ensuring improved performance quality, standards and accountability in relation to value for money, expected performance and professional standards⁽³⁸⁾. Publications and website material from Irish health and social care professional regulatory bodies were reviewed to ascertain current requirements in relation to education standards, competencies, curriculum, learning outcomes, assessment and teaching of clinical effectiveness. The following health and social care professions and associated regulatory bodies were included: Nursing and Midwifery Board of Ireland (NMBI); Health and Social Care Professionals Council (CORU); Irish Medical Council (IMC); Pharmaceutical Society of Ireland (PSI); and Dental Council. Details for each of the regulatory body requirements are provided within Appendix 1. A very brief synopsis is provided below followed by key observations in relation to requirements for clinical effectiveness education.

CORU - The Health and Social Care Professionals Act (2005) provides for the establishment of Registration Boards to establish and maintain Standards and Registers for, at present, 14 health and social care professions in Ireland including Clinical Biochemists, Counsellors and Psychotherapists, Medical Scientists, Optometrists, Podiatrists, Psychologists, Social Care Workers, Dietitians, Occupational Therapists, Physiotherapists, Radiographers and Radiation Therapists, Optometrists and

Dispensing Opticians, Speech and Language Therapists and Social Workers. CORU, the body that regulates allied health and social care professionals in Ireland, calls for curriculum models to reflect current evidence-informed and research based educational theory and practice. It recommends that the curriculum model chosen should be dynamic and flexible to allow for changes in the relevant profession, health and social care delivery and the development of evidence-based/informed practice. It also notes that curriculum design and development should be guided by professional, evidence-based knowledge of the subject. In accordance with CORU's standards of proficiency, health and social care professionals in Ireland are required to safeguard the interests of the public by fostering high standards of professional education, training and competence in their relevant profession, and they must also understand the need to maintain the highest standards of personal and professional conduct. Health and social care professionals governed by CORU are expected to: 1) use a range of research and evaluative methodologies including evidence-based practice research; 2) understand the principles of quality assurance and quality improvement and 3) be aware of the role of audit and review in quality management, including the use of appropriate outcome measures.

The Nursing and Midwifery Board of Ireland (NMBI) Code of Professional Conduct for each Nurse and Midwife (2014)⁽¹³⁾ requires registered nurses and midwives to deliver safe and competent practice based on best available evidence and best practice standards. In accordance with the NMBI's Code of Professional Conduct and Ethics, it is recognised that research is central to nursing and midwifery professions. Research informs the standards of care and ensures that other professions provide the highest quality of care and cost-effective services to society. Furthermore, registered midwives are required to comply with midwifery practice standards and inform the evidence-based practice of midwifery in Ireland. The Practice Standards for Midwives (2015)⁽¹⁴⁾ highlight the importance of quality measures such as audits of practice and research projects. The Midwife Registration Programme Standards and Requirements Fourth Edition (2016)⁽¹⁶⁾ and the Nurse Registration Programme Standards and Requirements Fourth Edition⁽³⁹⁾ echoes these standards through highlighting the importance of being aware of: 1) identifying and accessing robust sources of knowledge; 2) the research process/methods; 3) audit cycle and its potential impact on clinical practice; 4) critical review and analysis of research findings and application to practice; 5) promoting and implementing evidence-based innovation in midwifery practice and 6) quality assurance/initiatives to include knowledge and skills to undertake clinical audit. The NMBI require that the curriculum model chosen should be dynamic and flexible to allow for changes in midwifery practice, the delivery of maternity services and the continued development of evidence-based practice. Similarly, the adoption of systematic approaches

to nursing/midwifery practice based on best available evidence is also highlighted within Post Registration Nursing and Midwifery Programmes Standards and Requirements (2015)⁽⁴⁰⁾.

The Medical Council of Ireland in their 'Guide to Professional Conduct and Ethics for Registered Medical Practitioners (2016)⁽⁴¹⁾ highlights that members should provide treatments and services that are safe and comply with the standards of the profession while promoting a culture of patient safety within the context of the wider healthcare system. It also states that competent doctors review and reflect on their practice and engage with quality improvement initiatives to help improve health services, while ensuring that all care provided is evidence based. The Professional Competence Guidelines for Doctors (2011)⁽⁴²⁾ identifies that the teaching and training of medical students and junior colleagues is vital to the continued provision of safe and effective healthcare. Medical professionals should be willing to take part in teaching and training in addition to supporting students/colleagues to develop their knowledge and skills. An integrated, systems-based approach to curriculum design and development should be implemented according to the Medical Education, Training and Practice in Ireland Progress Report. The curriculum design for medical training in Ireland reflects a variety of methods of teaching and learning and provides a balance between: emphasis on developing students' communication, team-working and interpersonal skills; problem-based learning approaches; development of early patient-contact programmes; systems-based/small-group/tutorial teaching; self-directed learning, research exposure and opportunities; exposure to clinical audit and an emphasis on the skills for lifelong learning.

The Pharmaceutical Society of Ireland (PSI) is the Pharmacy Regulator for registered pharmacists in Ireland. The PSI outlines that a pharmacist must employ their professional competence, skills and standing in a manner that brings health gain and value to the community and the society in which they live and work. The Code of Conduct for Pharmacists⁽⁴³⁾ identify that pharmacists practice must be directed to maintaining and improving the health, wellbeing, care and safety of the patient. The PSI's Core Competency Framework states that pharmacists should: 1) actively influence and participate in health policy development, review and revision; 2) maintain, develop and update competence and knowledge of evidence-based learning, which includes CPD and CE (Continuing Education); and 3) undertake regular reviews, audits and risk assessments. A new curriculum for pharmacy students was developed recently with the first roll out of this for completion by 2020. It is hoped that the new curriculum will allow for the dispersal of practice placements throughout the five years of the programme and will enable students to gain experiences of varying durations in the three main pharmacy practice settings of community, hospital and industry. The PSI aims that this change will

benefit the health system through the training of pharmacists in a more rounded and integrated manner.

The Dental Council is the regulatory body for dental health professionals in Ireland. The Dental Council's Professional Behaviour and Ethical Conduct (2012)⁽²⁰⁾ highlights the importance of dental health professionals safeguarding the health and safety of their patients. Their Scope of Practice (2014)⁽²¹⁾ identifies the need for dentists to have a clear understanding of their legislative, social and economic environment while balancing changes within these environments with ethical principles and current scientific evidence. It also states that all dental health professionals should be motivated by the three-fold aim of safeguarding the health of patients, promoting the welfare of the community and maintaining the honour and integrity of the dental profession. The teaching and learning approaches of dental education include traditional didactic teaching methods, small group case discussions and clinical training using simulation and treatment of patients under supervision.

2.1.1 Observations from National Regulatory/Accreditation Body Requirements

From a review of the documents published by regulatory bodies in Ireland, explicit reference to the term 'Clinical Effectiveness' is not evident. However, the majority of regulatory bodies explicitly reported on core aspects of clinical effectiveness including the importance of practice based on best available evidence, and the need for quality improvement processes for the purpose of providing safe and effective care. Curriculum considerations were generic in nature (if included), with the exception of CORU and the NMBI who highlight the importance of a flexible and dynamic curriculum model to allow for changes in practice and the continued development of evidence-based practice. The PSI explicitly specifies that education standards for entry to the pharmacy register must ensure optimum standards of care and safety for patients. Three out of five regulators commented on teaching and learning strategies. In particular, CORU identified that a balance between lectures, tutorials, workshops, small group interactions, demonstrations, practical work and self-directed learning is essential. It also states that assessment of learning is a continuous process and a balanced and integrated distribution of assessment strategies throughout programmes is required. The Medical Council of Ireland states that teaching and training medical students and junior colleagues is vital to the continued provision of safe and effective healthcare. The standards from all five of the regulators, particularly at an undergraduate education level, identify that evidence-based practice is at the core of supporting the delivery of safe and effective care to patients/service users.

2.2 NCEC Education Fora

Since 2016, the NCEC has facilitated annual Clinical Effectiveness Education fora, to commence a process of engagement with key stakeholders by examining opportunities for clinical effectiveness education and training. Specific aims included:

- To discuss current and future provision of education relevant to clinical effectiveness/evidence-based practice in Ireland.
- To explore the vision for clinical effectiveness training and capacity building in Ireland.
- To capture baseline data on the provision and variation of teaching EBP to health and social care professionals/students in Ireland.
- To identify core competencies/educational goals to enable health service staff to support the clinical effectiveness agenda.
- To discuss potential for joint (multidisciplinary) team learning.
- To discuss principles for inclusion of clinical effectiveness education in curricula and identify opportunities for same within current curricula.
- To discuss requirements of the regulators/professional bodies in relation to clinical effectiveness education.

Invited Forum participants included:

- Health and social care professionals across the health and social care sectors who are responsible for the provision of undergraduate and postgraduate education in Ireland.
- Professional body representatives from medicine, nursing/midwifery and allied health professionals.
- Stakeholders with a vested interest in clinical effectiveness education (see Appendices 2 and 3).

Discussions from both 2016 and 2017 NCEC Education fora were moderated and documented in flipcharts in the format of narrative data. These findings were grouped according to the topics of discussion, by looking for core aspects and agreements between participants (see Appendices 2 and 3).

Topics of discussion included:

- 1) Components of a competency framework for clinical effectiveness education including relevant non-clinical scholarly activities common to all professions;
- 2) Teaching and learning strategies;
- 3) Assessment of clinical effectiveness education;
- 4) Integration of clinical effectiveness education and associated barriers and enablers.

2.2.1 Observations and Recommendations from NCEC Education Forum Meetings

The outcomes from the NCEC Education Fora were consolidated and summarised with key recommendations as follows:

1) Components of a competency framework for clinical effectiveness

There was consensus that Evidence Based Practice (all 5 steps i.e. Ask, Acquire, Appraise, Apply, Assess), quality improvement processes (with particular emphasis on audit) and implementation science, (incorporating elements of implementation strategies, culture change, and human factors) be considered core elements of a Competency Framework for Clinical Effectiveness Education. The participants fully endorsed the pre-publication copy of Albarqouni et al (2018) international consensus statement recommendations with *agreement to adopt its core competencies for EBP as part of the clinical effectiveness education competency framework*. In addition, competencies relating to communication, leadership, and professionalism were also highlighted as having potential for inclusion in a clinical effectiveness education framework.

2) Teaching and learning strategies

Forum participants emphasised the importance of developing and applying teaching strategies according to educational level and/or prior experience of clinically effective practice. In essence while competencies may be generic/global, their incorporation into curricula/programmes should be determined by students' prior knowledge/experience. It was highlighted that teaching clinical effectiveness required an approach that is dynamic, interactive, accessible, reflexive and preferably interprofessional. A range of teaching and learning strategies were noted, with the most frequently mentioned including: mentoring/role modelling in clinical and simulated settings, enquiry and problem-based learning.

3) Assessment of clinical effectiveness education

Consensus as to optimal approaches, not only in the assessment of programme learning outcomes of clinical effectiveness education, but also in the evaluation of the effectiveness of the implementation of clinical effectiveness education was not reached. Predominant suggestions in relation to the former included practice-based, structured, self, peer or inter-professional assessment of clinical effectiveness learning activities. The main strategies cited for evaluating the effectiveness of implementing clinical effectiveness education included external assessment of the quality of clinical effectiveness education provided and the demonstration of clinical effectiveness competency use in a semi-regulated manner.

4) Integration of clinical effectiveness education

To promote the integration of clinical effectiveness into professional education programmes, participants noted the need to bridge the gap between practice and education and the importance of incorporating patient expertise into clinical effectiveness processes, as well as expertise from international leaders. Participants suggested a number of strategies that could facilitate such integration including: development of an integrated healthcare curriculum; inclusion of EBP into policy guidelines for curricula; clarification on how health and social care regulators and accreditors play a role in supporting clinical effectiveness, encouraging participation in opportunities for clinical effectiveness in practice; development of training programmes for those responsible for teaching clinical effectiveness including content on human factors, sociology, inter-professional skills, psychology and patient centred care.

2.3 National Research on Evidence Based Practice Education

Research conducted on teaching evidence-based practice to health and social care professionals in Ireland in 2017 and 2018 provides key data for informing the development of a competency framework for clinical effectiveness education, not only in terms of recommending core competencies, but also in terms of the framework's incorporation and application into existing programme curricula.

2.3.1 Research on Teaching of Evidence Based Practice in Ireland – to Health and social care professionals and students (2017)

In 2017, the National Clinical Effectiveness Committee (NCEC) of the Department of Health commissioned a national project to ascertain current practice and provision of EBP education across health and social care professions at undergraduate, postgraduate and continuing professional development programme levels for the purpose of making key recommendations to health and social care educators and policy makers in relation to 'best practice' for EBP education (<https://health.gov.ie/wp-content/uploads/2018/01/Teaching-of-EBP-in-Ireland-Summary-report-Oct2017.pdf>). To address this aim in a meaningful and comprehensive manner the following objectives were specified:

- Provide a contextualised succinct synthesis of literature relating to the competencies and programme components associated with EBP education.
- Ascertain nuanced perspectives from international EBP education experts on the provision of EBP education for health and social care professionals.
- Gather baseline data on current provision and practice of EBP education in higher education institutes and professional training bodies across health and social care professions in Ireland,

for use as comparative data internationally and to track changes in EBP education at a future date.

Three distinct, but interlinked phases of research, namely: (1) rapid structured review, (2) EBP education expert interviews, and (3) a national EBP teaching survey were conducted to achieve these objectives.

In brief, a narrative synthesis of 83 studies included in the rapid review revealed that participation in any form of EBP education has beneficial effects across all EBP competencies, with the most apparent positive trend derived from multi-modal teaching and learning interventions which address at least two or more of the five EBP steps of Ask, Acquire, Appraise, Apply, Assess. However, unequivocal evidence in relation to what form or combination of EBP education components have the most beneficial long-term effects, particularly in terms of translating knowledge and skills into clinical application of EBP was lacking. Explicit reference to the requirement of health and social care professionals internationally, to engage in EBP for the provision of the highest quality of care and cost-effective services to society was evident throughout professional/regulatory bodies' standards and policy documents.

Interviews conducted with 5 EBP education experts from the UK, Canada, Australia and New Zealand provided definitive advice in relation to; (i) EBP curriculum considerations; (ii) Teaching EBP and (iii) Stakeholder engagement in EBP education. The need for EBP principles to be integrated throughout all elements of healthcare curricula was emphasised in regard to curriculum considerations. Embedding EBP within compulsory profession-specific competencies and/or accreditation processes was suggested to present opportunities for real integration of EBP. It was advised that EBP competencies should centre on the oft-cited steps of asking questions, acquiring, appraising and applying evidence to patient care decisions, with additional attention required on developing professionals' ability to communicate evidence effectively and participate in shared decision-making. Insights into the adoption of effective strategies to realise successful student learning and understanding were provided, with a strong emphasis on employing teaching methods which are clinically based. EBP role models and clinicians with the 'X-factor' were highlighted as being integral to demonstrating the application of EBP in clinical decision-making and facilitating the contextualisation of EBP within a specific setting/organisation. Engagement of national policy makers, health and social care professionals and patients with EBP was also suggested as having potential to advance EBP teaching and application in the clinical context. Providing structured and embedded EBP activities relevant to clinical care was highlighted as a pragmatic approach to improve health and social care professionals' consistency in the application of EBP. Enabling patients to engage with evidence with a

view to informing health and social care professional/patient interactions and care decisions was also advocated.

Representation from 11 health and social care professions, across undergraduate, postgraduate and continuing professional development academic levels was achieved from the national EBP teaching survey. 'Blended learning', that is a combination of traditional and problem-based learning, was the principal teaching approach used to deliver healthcare curricula overall, of which EBP is a component. 'Stand-alone' didactic lectures are the most frequently used method of teaching EBP across all academic programme levels, with non-face-to-face methods and practice-based learning workshops allocated the least amount of teaching time. A named EBP Lead/Champion was not identifiable within the majority of educational institutions surveyed.

In relation to curriculum issues specific to EBP, all EBP learning activities as outlined by the Sicily Statement (ask, acquire, appraise, apply and assess) were reported as being included in key content areas across health and social care profession programmes, with activities in relation to the retrieval, accessing and appraisal of evidence classified as the most common activities. The most common methods used to assess EBP learning included Critically Appraised Topics (CATs) and Observed Structured Clinical Examinations (OSCEs) with the application of CATs within a clinical setting least used. Education on clinical audit was provided by the majority of represented institutions and across all academic programme levels, although notably less so at a continuing professional development level. Methods of teaching included small group tutorials, integration of audit material into other lecture topics and the application of audit methods into practice settings.

The top three rated barriers to EBP teaching include difficulties integrating evidence into practice, the lack of time for EBP within curricula and the lack of importance or the perceived relevance by students of EBP education provision. Access to courses to enhance knowledge of EBP/teaching of EBP, in addition to evidence of improved patient outcomes from the use of EBP are seen as potentially helpful strategies to enhance EBP teaching.

2.3.2 Survey of Teaching EBP (Forum of Postgraduate Medical Training Bodies)

The EBP teaching survey⁽⁵⁾ was distributed to the Forum of Postgraduate Medical Training Bodies (FPMTB), to further consolidate the national baseline EBP teaching data. Of 17 departments contacted, 14 department representatives responded (81% response rate) (see Table 2).

Table 2 Responses to EBP Survey (Forum of Postgraduate Medical Training Bodies Representatives)

Forum Bodies	Response no.
College of Anaesthetists	1
College of Psychiatrists of Ireland	1
Faculty of Occupational Medicine	1
Faculty of Pathology	1
Faculty of Public Health Medicine	1
Faculty of Radiologists	2
Institute of Obstetricians and Gynaecologists	1
Irish College of General Practitioners	1
Irish Committee on Higher Medical Training,	1
Royal College of Surgeons in Ireland (Oversight)	1
Faculty of Dentistry	1
Irish Committee for Emergency Medicine Training	1
Irish Surgical Postgraduate Training Committee	1
Royal College of Physicians (Oversight)	1

Within these departments, EBP programmes were taught across undergraduate (13.33%), postgraduate (80%) and continuing professional development (46.67%) levels.

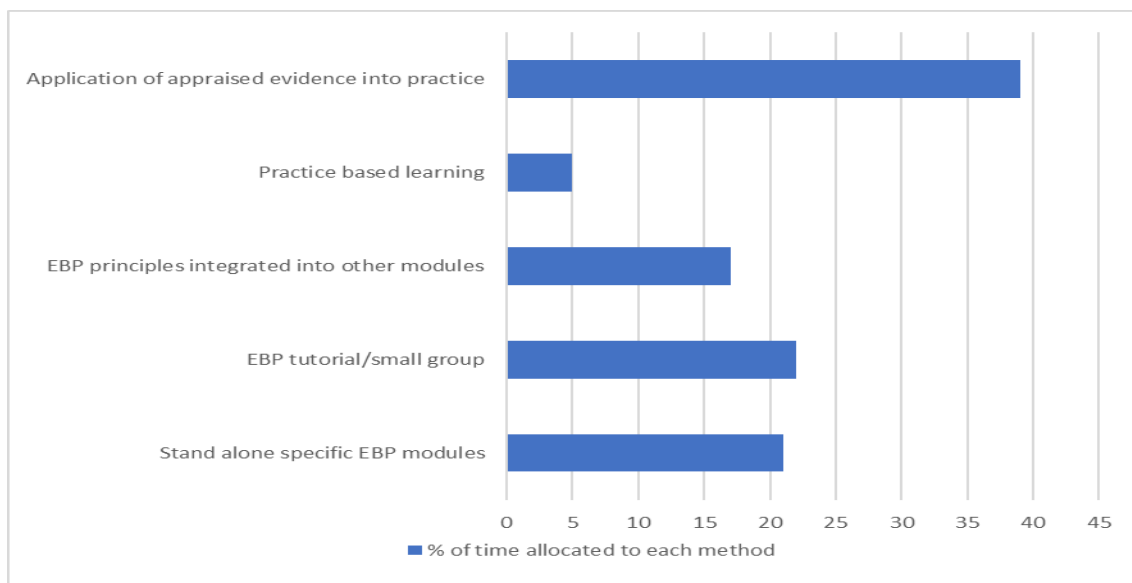
Teaching EBP

Specific contextual information relating to EBP teaching within participating educational institutions was gathered and included: (i) length of time since the formal introduction of EBP; (ii) staff involved in teaching EBP; (iii) principal teaching approach throughout curriculum; (iv) EBP teaching methods. Thirty-six per-cent (n=5) of respondents stated that the formal teaching of EBP had been introduced more than 10 years previously with less than 10% stating that it had been introduced within the past year. At postgraduate level, academics and clinical educators were predominantly involved in the formal teaching of EBP (see Table 3).

Table 3 Staff involved in the formal teaching of EBP (postgraduate level)

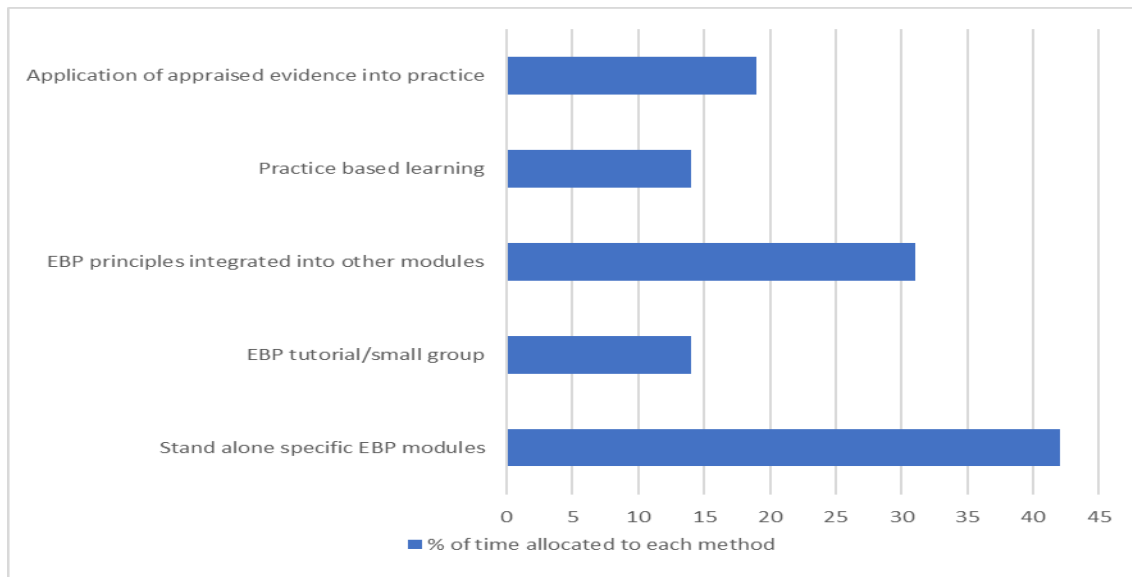
Staff Involved in formal teaching	n	%
Academic staff	8	57.14%
Clinical educators	10	71.43%
Librarians	1	7.14%
Statisticians	3	21.43%
Other	4	28.57%
N/A	1	7.14%

The majority of respondents stated that blended learning (a combination of traditional and problem/inquiry-based learning) was the most frequently used approach to teaching/learning and assessment throughout the curriculum (46.2% n=6), followed by 'other' methods (30.7% n=4), traditional approaches (15.4% n=2) and problem-based learning (7.7% n=1). In terms of teaching and learning modes, the least amount of time was allocated to non-face-to-face methods and practice-based workshops, with application of appraised evidence to practice the predominant learning strategy used within postgraduate programmes. At CPD level, stand-alone EBP specific modules were most frequent (see Figures 3 and 4 below).



*Percentages add to more than 100% as respondents could indicate more than one option.

Figure 3 Percentage of time allocated to EBP teaching method (P/G) (n= 9)



*Percentages add to more than 100% as respondents could indicate more than one option.

Figure 4 Percentage of time allocated to EBP teaching method (CPD) (n=5)

When asked about student participation in educational activities specific to clinical effectiveness topics, respondents provided the following information as presented in Table 4.

Table 4 Students'/trainees' participation in educational activities in areas of clinical effectiveness

Clinical Effectiveness Topics	n	(%)
Quality Improvement Processes	8	72.73%
Patient Safety	8	72.73%
Implementation Science	3	27.27%
Health Informatics	1	9.09%
Cost Effectiveness Analysis	1	9.09%
None of the above	1	9.09%
Other	2	18.18%

EBP Training and Resources

Respondents were asked to consider training and access to resources from the perspective of staff involved in EBP teaching. When asked whether staff received formal educational training in teaching EBP, 50% (n=6) answered 'yes'. In terms of accessing and using resources for EBP teaching, the majority (90.91%) reported access to electronic sources necessary for finding appropriate evidence and undertake training in relation to same.

Barriers to EBP Teaching

On a 5-point Likert scale, where 1='Not Significant' and 5='Extremely Significant', respondents were asked to rate the significance of a number of statements in relation to barriers to EBP teaching. The majority of respondents rated the barriers listed as insignificant (Table 5).

Table 5 Perceived significance of named barriers to EBP Teaching

Proposed Barriers	Total	1 Not significant	2 Slightly significant	3 Moderately significant	4 Very significant	5 Extremely significant
Lack of staff interest	9	(5) 55.6%	(2) 22.2%	(0) 0%	(1) 11.1%	(1) 11.1%
Lack of time in the curriculum	10	(3) 30%	(2) 20%	(3) 30%	(1) 10%	(1) 10%
Lack of EBP knowledge amongst staff in the school/dept./centre/training body	10	(5) 50%	(1) 10%	(4) 40%	(0) 0%	(0) 0%
Lack of library staff knowledgeable in the EBP process	10	(5) 50%	(3) 30%	(1) 10%	(1) 10%	(0) 0%
Lack of library staff knowledgeable in EBP related e-resources	10	(5) 50%	(3) 30%	(1) 10%	(1) 10%	(0) 0%
Lack of evidence of value of using EBP	10	(7) 70%	(0) 0%	(2) 20%	(1) 10%	(0) 0%
Poor physical access to technology	10	(6) 60%	(1) 10%	(3) 30%	(0) 0%	(0) 0%
Poor access to EBP related e-resources	10	(6) 60%	(2) 20%	(2) 20%	(0) 0%	(0) 0%
Students perceived importance of EBP educational provision vs traditional educational approaches	10	(4) 40%	(4) 40%	(1) 10%	(1) 10%	(0) 0%
Difficulty integrating evidence into practice/clinical care	10	(3) 30%	(3) 30%	(2) 20%	(2) 20%	(0) 0%

Strategies to Enhance EBP Teaching

On a 5-point Likert scale where '1=Not Helpful' and '5=Extremely Helpful', participants were asked to rate the extent to which a number of strategies may be helpful in teaching EBP. Table 6 describes the level of agreement with the listed strategies and the extent of perceived 'helpfulness' for each strategy. While all listed strategies were deemed helpful, over 70% (n=7.7) rated the following as either 'moderately, very or extremely helpful': (1) 'closer working relationship with librarians' and (2) 'staff access to courses to enhance their knowledge of EBP.'

Table 6 Perceived helpfulness of strategies for teaching EBP

Proposed Strategies	Total	1 Not helpful	2 Slightly helpful	3 Moderately helpful	4 Very helpful	5 Extremely helpful
Closer working relationship with librarians	11	(1) 9%	(1) 9%	(5) 45%	(2) 18%	(2) 18%
Staff access to courses to enhance their knowledge of EBP	11	(1) 9%	(2) 18 %	(5) 45 %	(0) 0%	(3) 27%
Staff access to courses to enhance their knowledge of teaching EBP	11	(1) 9%	(3) 27%	(4) 36%	(1) 9%	(2) 18%
Evidence of improved patient outcomes from use of EBP	10	(1) 10%	(3) 30%	(3) 30%	(2) 20%	(1) 10%
National agreement on required EBP competencies	11	(2) 18%	(3) 27%	(2) 18%	(2) 18%	(2) 18%
Revision of local curriculum to include time allocation/further time allocation for EBP	10	(1) 10%	(5) 50%	(2) 20%	(1) 10%	(1) 10%

The findings of the EBP survey distributed to the Forum of Postgraduate Medical Training Bodies were similar in all aspects of the national survey with the exception of the importance, or in this instance, the lack of importance, of proposed barriers to teaching EBP.

2.3.3 Observations/Recommendations from Research conducted on EBP Education in Ireland

The national EBP report (2017), in conjunction with the findings of the focused FPMTB EBP teaching survey were reviewed, with 10 recommendations under the categories of: (1) Competencies; (2) Curriculum considerations and (3) Teaching, learning and assessment strategies selected considering their potential transferable use in the wider context of clinical effectiveness education.

Competencies

- The minimum standard educational requirements and core learning outcomes should derive from the 5-step model of EBP (ask, acquire, appraise, apply, assess).
- Place increased emphasis on developing competency in, and providing access to, pre-appraised evidence resources to facilitate the acquisition and appraisal of evidence to inform practice.
- Further emphasise competencies relating to communication of evidence and shared decision-making processes with patients/clients.

Curriculum Considerations

- Use educational theories (e.g. adult learning theory) to guide the structuring of curricula, to facilitate the integration of EBP as a core curriculum component.
- Apply mapping tools to health education curricula to ensure the vertical and horizontal integration of EBP throughout all programme elements.
- Scaffold EBP competency acquisition across novice, intermediate and professional entry levels within undergraduate programmes to structure learning and application of EBP throughout the duration of a programme of study.
- Provide additional opportunities for students and practitioners to engage in the application of EBP and the assessment of its impact in practice through audit and associated activities.

Teaching, Learning and Assessment Approaches

- Engage in an interprofessional teaching approach to the delivery of core common components of EBP education across undergraduate and postgraduate programmes
- Use clinically integrative, interactive and multi-modal teaching and learning strategies for enhanced EBP competence and knowledge transfer.
- Use a wide range of validated assessment strategies (where possible, e.g. Fresno Test, Berlin Questionnaire, GATECAT - Graphic Appraisal Tool for Epidemiological studies, OSCE) that can accurately assess competency attainment to promote a consistent evaluation of EBP teaching outcomes.

2.4 Scoping review

2.4.1 Introduction

As specified by the Department of Health, the aim of this review was to:

“Systematically map and categorize existing competency frameworks (and/or guidance documents) that might be classified under the umbrella term ‘clinical effectiveness education’”.

The purpose of the scoping review is to provide a clear understanding of how competency frameworks have been addressed in clinical effectiveness education for health and social care professionals, educators and students. Therefore, two research questions were chosen to guide the review:

- i. What are the existing competency frameworks (or guidance documents) of clinical effectiveness education?
- ii. What key competencies are aligned to clinical effectiveness education?

2.4.2 Review methods

Scoping reviews facilitate the examination of the extent, range and nature of research activity in a chosen area⁽⁴⁴⁾. In comparison to systematic reviews where the best evidence available is sought to answer a tightly defined question, scoping reviews provide an overall map of evidence that has been previously generated. Valuable information about the range of ways in which competency frameworks had been applied to clinical effectiveness education could therefore be derived. Through an initial search of the Joanna Briggs Institute (JBI) and Cochrane Libraries, in addition to the PROSPERO website, no protocols and systematic review reports with the same or similar review questions were found.

The Joanna Briggs scoping review protocol⁽⁴⁴⁾ was adhered to and included the following steps: (1) statement of a research question, in accordance with the review objectives; (2) definition of inclusion criteria guided by the Participants, Concept and Context (PCC) mnemonic; (3) focused search strategy; (4) data extraction; and (5) presentation of the results.

Inclusion Criteria

As outlined in Table 7 the PCC mnemonic guided paper eligibility criteria

Table 7 PCC framework for article selection process

PCC framework	
Population	Health and social care professionals, healthcare students, healthcare educators All health and social care professionals, including doctors, dentists, nurses, occupational therapists, pharmacists, physiotherapists, speech and language therapists, dietitians, audiologists, clinical psychologists, radiographers, radiation therapists, podiatrists, paramedics; at undergraduate, postgraduate, or continuing professional education level were included as well as students of any of these areas.
Concept	Clinical effectiveness Studies or documents which explicate the following: Current recommendations in clinical effectiveness that include any of the following components: Evidence based practice (including evidence based medicine, evidence based healthcare), implementation science (including cost effectiveness) or quality improvement (including clinical audit, clinical guidelines/clinical practice guidance).
Context	Health and social care professional education competency framework Studies or documents which explicate the following: Competency frameworks/models Curriculum development processes
Setting	Specific to educational/healthcare settings in Ireland, UK, New Zealand, Australia, USA, Canada or countries categorized as high in the Human Development Index (UNDP, 2016) ¹
Publication type/ level of evidence	Empirical literature (quantitative or qualitative designs), including systematic reviews; Grey literature and evidence-based policy documents from referenced countries. Published between January 1 st 2008 and March 1 st 2018. Written in the English, Portuguese, Spanish, French or Italian languages.

¹ The human development index is calculated using a composite of: life expectancy at birth (duration of life and pseudo measure of health); expected years of schooling (knowledge parameter), and gross national income per capita (indicator of standard of living) and is published by (UNDP, 2016). Such countries have resource-limited health care settings, facilities, systems thus limiting the transferability of the research findings to the Irish context. UNDP (2016) Human Development Report 2016. United Nations Development Programme (UNDP), New York, USA.

Papers were included if they were:

- Studies with a principal focus on clinical effectiveness or components thereof (evidence-based practice, implementation science, quality improvement) and on competency frameworks or curriculum development.

Papers were excluded if they:

- Reported or described competency frameworks specific to health conditions rather than knowledge, skills and attitudes encompassed within clinical effectiveness education.
- Focused on theoretical reviews of different components of clinical effectiveness.
- Were based on healthcare settings in countries categorized as either medium or low Human Development Index.
- Were narratives, letters, discussion papers, opinion pieces, theses and books reporting competency frameworks for clinical effectiveness education.

Search strategy

We followed the JBI three-step process as described below⁽⁴⁴⁾. First, we deployed an initial search on MEDLINE to identify the text words and keywords used to address the participants, concept and context. Second, we used the identified keywords and terms to conduct another search on the EBSCO database, to search CINAHL (Cumulative Index to Nursing and Allied Health Literature), MEDLINE, PsycARTICLES, Psychology and Behavioral Science Collection, UK/Eire Reference Centre and ERIC. The search strategy encompassed terms for health and social care professional, clinical effectiveness and competency (Appendix 4). Search limit included a 10-year date restriction (2008-2018) and was deployed in March 2018. Third, we reviewed the reference list of identified papers and deployed a search of grey literature. This search included Open Grey, WHO, NHS Evidence database, NICE, UK Evidence for policy and Practice Information and Co-ordinating Centre (EPPI-Centre), TUNING Project and a list of websites pertaining to third sector education in the UK (provided by an expert in the field of healthcare education). Specific educational policy publications by regulatory and professional bodies for health and social care professions in referenced countries were also searched. The full search terms and combinations are presented in Appendix 4 (Empirical Literature search strategy), and Appendix 5 (Grey Literature search strategy).

Review Process

All potentially eligible papers identified in the search strategy were exported to Endnote (Version 7.0) where duplicates were identified and removed. Remaining references were then transferred to an Excel

file. Articles were screened initially for title and abstract independently. Agreement by two members of the team (HA and EL) was required for an article to merit a full text read. Disagreements were resolved by consensus within the team and where necessary a third reviewer was consulted.

Search Output

The search yielded a total of 3079 records which, following the screening and full text read processes, were reduced to 35 papers (21 empirical literature, 14 grey literature) for inclusion in the structured review. See Figure 5 below for the screening process details as per PRISMA guidelines⁽⁴⁵⁾.

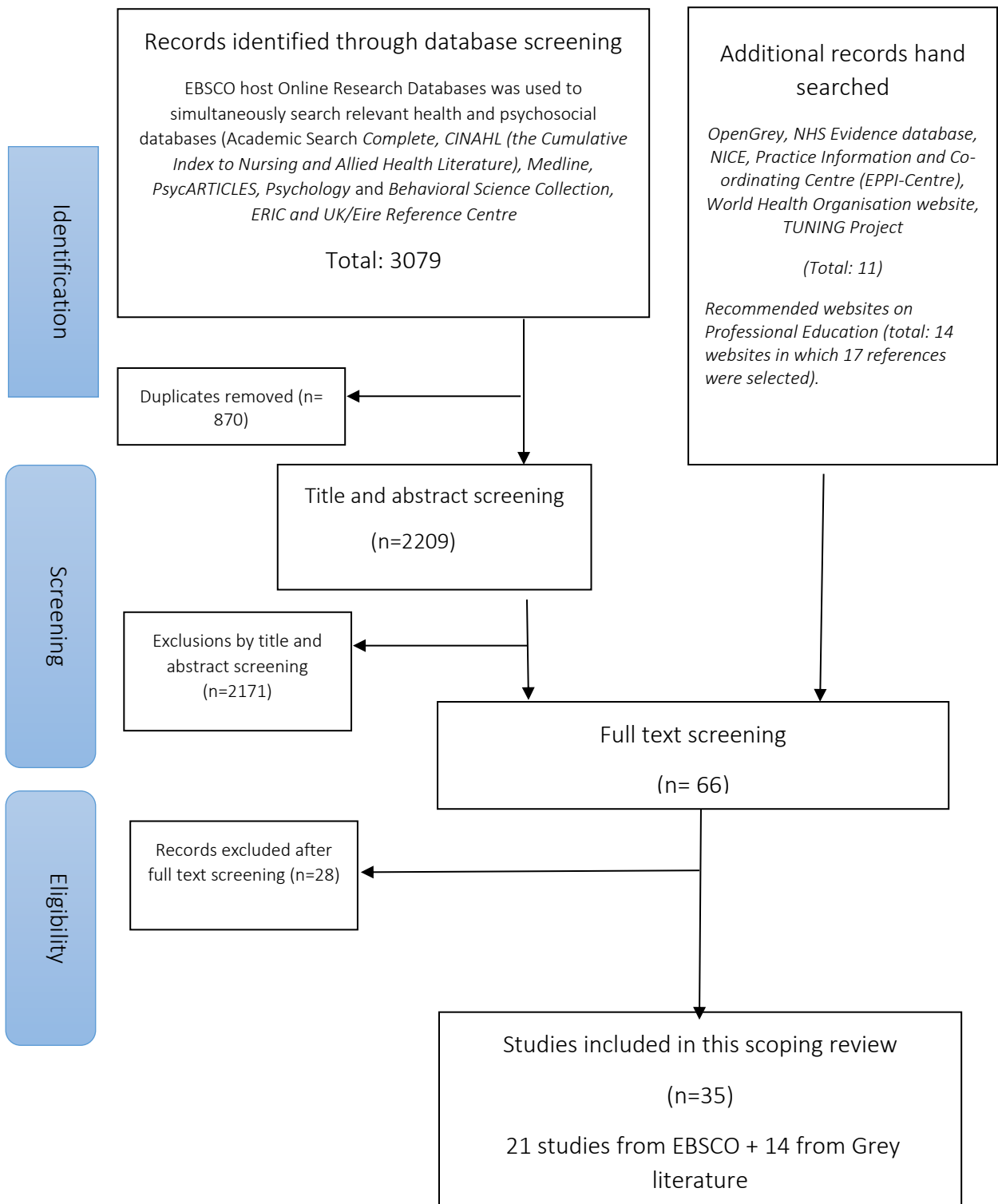


Figure 5 PRISMA flow diagram

Audit Trail

To ensure transparency in terms of total number of articles retrieved, searches were saved using an EBSCO account. This also allowed for additional searching of new papers over the course of the review. Articles retrieved were exported to Endnote to facilitate the removal of duplicates, the generation of reference lists and the subsequent export of references to Excel for the screening process.

Data Extraction

The review questions guided the data extraction process, including details of the components of competency frameworks (or guidance documents) of clinical effectiveness education and competencies described. Furthermore, data on authors, year, country of publication, type of study, academic programme level, discipline and existence of an interprofessional focus were extracted. Empirical literature data was extracted by HA and a sample cross-checked by EL to ensure consistency. Grey literature data was extracted by HA and similarly a sample cross-checked by EL and SOC. Full details of data extraction can be seen in Appendix 6 (Empirical literature) and Appendix 7 (Grey literature).

2.4.3 Findings- Empirical literature

To answer the review questions, existing competency frameworks (or guidance documents) of clinical effectiveness education are outlined in this section, first from empirical studies and followed by grey literature.

Characteristics of Studies

Country of Origin: The country of origin for the majority of primary authors was the USA (n=15). The remaining studies were from Canada (n=2), Australia (n=2), the UK and Saudi Arabia (all n=1).

Health and social care professions: Across the various disciplines, those most commonly reported upon were Nursing (n=9) and Medicine (n=4). Five studies examined a number of disciplines concurrently while the remaining studies included disciplines such as Psychology (n=2) and Occupational Therapy (n=1).

Type of studies: Of the 21 papers reviewed, the majority were descriptive evaluations of EBP curriculum development processes ⁽⁴⁶⁻⁵⁴⁾ (n=9) with 4 reported as descriptions of frameworks ⁽⁵⁵⁻⁵⁸⁾ (n=4) or competency development processes ^(6, 59-61) (n=4). The remaining papers were training initiatives^(22, 62) (n=2) a structured reflection⁽⁶³⁾ and development of a model⁽⁶⁴⁾.

Academic level: Eleven studies examined postgraduate (PG) programmes, while 5 focused on undergraduate (UG) education. The remaining 4 papers were focused at a CPD level specific to 'healthcare practitioners' (n= 2), 'residents' and 'frontline staff' (both n=1).

Components of clinical effectiveness

To identify trending topics in the international literature, frequencies of word use in the selected papers were analysed using NVivo version 11 software. Exact matches were considered. Weighted percentages were calculated for word frequencies. The results were visually displayed using word clouds (Figure 6). For the purpose of our data analysis, clinical effectiveness included (but was not restricted to) the following aspects: evidence-based practice (including evidence-based medicine, evidence-based healthcare), implementation science (including cost effectiveness) or quality improvement (including clinical audit, clinical guidelines/clinical practice guidance). The three aspects of clinical effectiveness were present in the report of most frequent words. Their percentages of use were compared and presented in Figure 6. Our findings indicate that EBP was the trending topic in competency frameworks for clinical effectiveness education.

A number of papers reported combined aspects of clinical effectiveness (n=12) and others focused on one single aspect, such as quality improvement (n=4), EBP (n=4), or implementation science (n=1).



Note: Evidence based practice 3.07%; quality 0.44%; implementation 0.21%.

Figure 6 Combined word frequencies for Clinical Effectiveness Education in all selected papers

Competencies aligned to clinical effectiveness

To frame our data analysis, we used the consensus statement on core competencies in evidence-based practice proposed by Albarqouni et al. (2018) as our conceptual lens. All articles were coded using NVivo version 11 software. Initially, six competency codes aligned to EBP were created:

- 1) 'Introductory' competencies: relating to fundamental or core concepts associated to EBP.
- 2) 'Ask' competencies: relating to the identification and structure of clinical questions.
- 3) 'Acquire' competencies: referring to the identification and recognition of relevant sources of research/health/administrative data/evidence, through systematic searching skills.
- 4) 'Appraise and interpret' competencies: relating to the critical evaluation of the integrity, reliability and applicability of research/health/administrative data/evidence.
- 5) 'Apply' competencies: referring to how professionals engage with evidence in their daily practice.
- 6) 'Reflect' competencies: reflecting upon knowledge translation strategies and processes.

Other codes were created to incorporate evidence on:

- 7) Quality improvement (inclusive of audit, clinical guidelines, clinical practice guidance)
- 8) Implementation science (including cost effectiveness)
- 9) Related competencies for clinical effectiveness education (see Appendix 6 for data extraction table).

Two readers reviewed each of the 21 articles using the same coding scheme. Their inter-coder reliability was checked with the goal of reaching consensus.

Giving due consideration to the analytical lens used, identified competencies were predominantly from the field of EBP, reflecting the trending of EBP in research on clinical effectiveness education. The most reported competencies were (in frequency order), 'acquire', 'appraise', 'apply' and 'ask'. Within the quality improvement and implementation science domains, competencies reported were mainly referred to as fundamental or core concepts associated with quality improvement and implementation processes. Related competencies for clinical effectiveness were identified, with the most frequently reported being collaborative practice, followed by human factors, communication and leadership (Table 8).

Table 8 Competencies for clinical effectiveness (Empirical Literature)

Competency for clinical effectiveness	Number of studies
EBP competencies	14
Acquire	10
Appraise	9
Apply	8
Ask	8
Introductory	5
Reflect	3
Quality improvement	10
Implementation science	9
Related competencies for clinical effectiveness (professional practice)	16

Evidence Based Practice

The majority of included studies in this scoping review (n=15) highlighted the importance of EBP competencies for clinical effectiveness. Between them, ‘acquire’, ‘appraise’, ‘ask’ and ‘apply’ were the most cited competencies. Only four studies are reported as having aimed to address all EBP competencies^(6, 47, 48, 57). Five studies reported how evidence-based practice was introduced to healthcare students/professionals in their frameworks or curricula^(6, 47-49, 59). Four studies included ‘reflection’ or ‘evaluation’ as an essential competency for successful EBP education^(6, 47, 56, 63).

Quality Improvement

Ten studies stated ‘quality improvement in healthcare’ as an ultimate goal of clinical effectiveness education^(46, 47, 53, 55, 56, 60-62, 64, 65). In general, these studies reported “appraise competencies”. Appraise competencies relate to the analysis of care setting for gaps between local and best practice standards to identify areas for quality improvement.

Implementation science, knowledge translation or dissemination science

The importance of implementation science was acknowledged by nine studies^(46, 47, 50, 54, 58, 59, 61, 65, 66). These studies reported ‘introductory’ competencies, related to fundamental or core concepts associated with implementation, such as models and theories of Knowledge Translation and the Knowledge to Action Framework. They also reported ‘apply’ and ‘appraise’ competencies, related to operationalisation of implementation and dissemination science.

Gonzales et al., (2012) introduced a distinction between translation or implementation of evidence into practice and dissemination science. To the authors, implementation refers to “the use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings” and dissemination as “the targeted distribution of information and intervention materials to a specific public health or clinical practice audience”⁽⁵⁸⁾. The majority of studies described competencies for both knowledge implementation and dissemination science^(58, 59, 61, 65, 66).

Related competencies for clinical effectiveness (professional practice)

Studies which reported competencies not specific to EBP, quality improvement, implementation science, knowledge translation or dissemination science were included in the theme “related competencies for clinical effectiveness” (n=16). These studies reported competencies related to collaborative practice, communication, human factors and leadership.

Collaborative practice was described as a competency related to effective teamwork and communication, mutual respect, team decision-making, conflict resolution and role clarification to achieve high quality patient care^(46, 54-56, 58-61) (n= 8).

Communication as a competency was described in terms of the importance of oral, written and IT skills to identify best evidence, manage data to support decision making, and explain complex information to a diverse range of individuals, in particular patients/services users^(46, 55-57, 60, 61, 64, 65, 67) (n=9).

Human factors as a competency was described in the context of how professionals can improve quality of healthcare and implement best practices by understanding:

- The manner in which human factors can impact performance, errors and interpretation of evidence^(48, 62).
- Personal perspectives and biases that can influence decisions^(57, 60).
- Patient and community as full partners in providing coordinated care based on respect for patient’s preferences and needs^(48, 50, 56, 57, 60).

In terms of the leadership competency, the importance of strong leadership from health professionals regarding the need and importance of clinical effectiveness for providing quality patient care was emphasised^(46, 53-55, 59, 64).

Summary box: Empirical literature

Key recommendations

- Clinical effectiveness education requires the development of competencies for EBP, quality improvement and implementation.
- Aspects of professional practice should be addressed in clinical effectiveness education by developing competencies for collaborative practice, communication and leadership.
- Clinical effectiveness education should prepare learners/practitioners for patient/service user's involvement in the implementation of EBP and quality improvement processes.

Reported competencies

- Evidence Based Practice: Introductory, ask, acquire, appraise, apply and reflect
- Quality improvement: Appraise
- Implementation: Introductory, apply and appraise.

Figure 7 Summary box (Empirical literature)

2.4.4 Findings- Grey literature

Following a search of the grey literature (see search strategy Appendix 5) 28 publications were screened. We used the same methodological approach described for the empirical literature to select publications, perform data extraction and analysis. Fourteen documents were reviewed.

Characteristics of Studies

Country of origin: Of the 14 publications retrieved, the country of origin for the majority of primary authors was the UK (n=7), followed by the USA (n=4). The remaining studies were from; the Netherlands, Canada and Australia (all n=1).

Health and social care professions: Across the various professions, those most commonly reported upon were Medicine (n=5). Five publications examined a number of disciplines concurrently while the remaining studies included disciplines such as, Nursing (n=2), Dentistry (n=1) and Nursing and Midwifery together (n=1).

Type of papers: The majority of publications were classified as frameworks (n=5) or standards (n=3). The remaining included: ethical guidelines, structured literature review, exploratory analysis,

PowerPoint presentation, learning outcomes description and a description of a framework development process (all n=1).

Academic level: Of the 14 publications reviewed, 11 examined programmes at a postgraduate level, and 2 papers focused at an undergraduate level. The remaining paper focused on policy formation.

Components of clinical effectiveness

Just two aspects of clinical effectiveness were present in the report of most frequent words: quality and evidence-based practice. Their percentages of use were compared and presented in Figure 8. Our findings indicate that ‘practice’, ‘patient’ were the trending topics in the grey literature of competency frameworks for clinical effectiveness education. Although the word ‘dental’ was one of the most frequent, all instances were from one single document.



Note: evidence-based practice 1.09%, quality 0.43%, patient/patients 1.78%, dental 1.08%.

Figure 8 Combined word frequencies for clinical effectiveness education in all selected findings

Competencies aligned to clinical effectiveness

Similar to empirical literature, ‘acquire’, ‘appraise’, ‘introductory’ and ‘reflect’ (in order of frequency), were the most reported EBP competencies. Likewise, the most related competency for clinical effectiveness was “collaborative practice” followed by communication and leadership (Table 9).

Table 9 Competencies for clinical effectiveness (Grey Literature)

Competency for clinical effectiveness	Number of studies
EBP competencies	14
Acquire	10
Appraise	10
Apply	9
Ask	10
Introductory	14
Reflect	13
Quality improvement	13
Implementation science or knowledge translation	8
Related competencies for clinical effectiveness (professional practice)	13

EBP competencies

Almost all publications highlighted the importance of EBP competencies for clinical effectiveness (n=11). While 9 of the 14 grey literature publications highlighted the importance of ‘reflection’^(11, 32, 67-73) just three of the empirical studies included ‘reflection’ as an essential competency for successful EBP education. The competencies pertaining to ‘ask’, ‘acquire’ and ‘appraise’ were each reported in 10 publications. Overall, in comparison to the empirical literature where only 3 studies cited all six competencies, six publications from the grey literature did so^(32, 56, 69, 70, 73, 74).

Quality improvement

Similar to the empirical data findings, the majority of grey literature studies stated ‘quality improvement in healthcare’ as a main component and goal of clinical effectiveness education^(5, 16, 30, 32, 34, 47, 56, 68-71, 73, 74) (n=13) Overall, quality improvement competencies were related to:

- 1) Fundamental or core concepts associated with quality improvement (‘introductory’ competencies);
- 2) Critical evaluation of clinical context to identify areas for improvement and outcomes of quality improvement projects (‘appraise’ competencies);
- 3) Application of quality improvement processes into practice (‘engage’ competencies).

Implementation science

Similar to the empirical findings, the importance of implementation science was acknowledged by 8 of the studies from the grey literature search^(32, 68, 69, 71-73, 75, 76). These studies reported ‘introductory’ competencies related to models and theories of Knowledge Translation including the Knowledge to Action Framework.

Related competencies for clinical effectiveness education (professional practice)

Papers that did not report competencies specific to EBP, quality improvement, or implementation science, were included in the theme “related competencies for clinical effectiveness education” (n=13) and were organized into 3 categories: collaborative practice, communication and leadership.

Collaborative practice was described in eight studies as a competency related to effective teamwork, collaboration and partnership with patients to achieve quality patient care. Effective collaborative elements included mutual respect, conflict resolution and role clarification to foster interdependent working relationships^(32, 71, 73-76).

In relation to communication, dimensions enunciated included safety, effectiveness, compassion and respectful across encounters with patients, families, and professional teams. Also included was the importance of listening to patients, taking account of their views, and responding honestly to their questions^(11, 65, 69, 71, 73, 75).

Leadership was deemed an essential part of clinical effectiveness processes, to guide and facilitate the implementation of best evidence and quality improvement processes. Leadership within the grey literature included continued individual accountability for one’s own actions, and an explicit role definition within one’s professional scope of practice^(71, 73, 75, 77, 78).

Summary box: Grey literature

Key recommendations

- Clinical effectiveness education requires the development of competencies for EBP, quality improvement, implementation, collaborative practice, communication and leadership.

Reported competencies

- Evidence Based Practice: Introductory, ask, acquire, appraise, apply and reflect.
- Quality improvement: Introductory, appraise and engage.
- Implementation: Introductory.

Figure 9 Summary box (Grey literature)

2.4.5 Scoping Review Findings Synthesis and Key Observations

There was no evidence of competency frameworks (or guidance documents) pertaining specifically to clinical effectiveness education. This review identified 35 studies that examined competency

frameworks (n=9) or related guidance documents (n=26), which focused on components of clinical effectiveness education. These studies predominantly originated from the USA, UK, Canada and Australia within the disciplines of nursing and medicine and were applied at a postgraduate level. In the majority of cases, the frameworks were discipline-specific, but a number promoted inter-professionalism within the competencies proposed.

It is evident from the analysis of the review's findings that:

- (1) EBP was the predominant trending topic across empirical and grey literature, denoting its significance to clinical effectiveness;
- (2) Internationally, the competencies aligned to clinical effectiveness endorse three distinct parts of clinical effectiveness: EBP, quality improvement and implementation science;
- (3) Elements of professional practice, such as collaboration, communication and leadership were highlighted as related competencies for implementing clinical effectiveness processes. Of note, patient/service user participation was highlighted within the collaboration and communication elements of professional practice. Based on the integration of empirical and grey evidence from this review, four domains of competencies for clinical effectiveness education are recommended and include: (1) EBP, (2) Quality Improvement Processes, (3) Implementation Science and (4) Professional Practice.

Competency frameworks and professional education guidance documents identified within the scoping review as being particularly relevant for informing the development of a proposed competency framework for clinical effectiveness education included:

- Core Competencies in Evidence-Based Practice for Health Professional-Consensus Statement⁽⁶⁾.
- General Medical Council - Principles and professional responsibilities⁽⁷⁰⁾.
- Implementation of Evidence-based medicine into routine GP practice⁽⁵⁷⁾.
- Development of student learning experience and interprofessional education evaluation⁽⁵⁵⁾.
- Training in Implementation and Dissemination Science⁽⁵⁸⁾.
- Australian Commission on Safety & Quality in Healthcare - Strategic and operational quality improvement plans⁽⁶⁷⁾.
- Development of teaching strategies for quality competency development in professional programmes⁽⁵⁶⁾.
- CANMEDS – Physician Competency Framework - Creation of tools for the assessment of professional competency and accreditation of residency programmes⁽⁶⁹⁾.

2.5 Data Integration

The aim of this consolidation report was to collate and synthesize evidence from a number of key national and international sources to provide recommendations to inform the proposal of a core competency framework for clinical effectiveness education for health professional programmes in Ireland. The evidence collated offers some consistent trends which are discussed under the following headings: (1) Competency Frameworks and Indicative Core Competencies for Clinical Effectiveness Education; (2) Curriculum Considerations; (3) Regulatory/Accreditation Body Professional/Educational Standards; (4) Teaching, learning and assessment methods for Clinical Effectiveness Education.

(1) Competency Frameworks and Indicative Core Competencies for Clinical Effectiveness Education

The international literature on existing relevant education and competency frameworks in relation to clinical effectiveness education highlights the need for competencies focused on EBP, quality improvement processes and implementation science practices. Related competencies, which address the need for effective communication, collaborative practice and leadership, were also prevalent within the literature. The NCEC forum findings (2016 /2017) endorsed the adoption of Albarqouni et al international consensus statement for core EBP competencies⁽⁶⁾, indicated the importance of inter-professional teamwork and organisational culture to implement EBP and emphasised the relevance of quality improvement practice, in particular, audit. The explicit references to the engagement of patient/service users within a proposed competency framework were prominent across data sources.

(2) Curriculum Considerations

Similar to EBP curriculum model recommendations⁽⁵⁾, clinical effectiveness curricula should be designed in a manner which explicitly and consciously optimises the integration of the theory and practice of clinical effectiveness throughout all academic and clinical learning domains. Curricula need to be closely aligned with educational theories, such as adult learning theory, that can assist in structuring curricula overall to facilitate meaningful integration^(79, 80). The use of mapping tools to ensure the vertical and horizontal integration of clinical effectiveness throughout all programme elements is recommended as is scaffolding the acquisition of core competencies across professional levels and within different contexts⁽⁵⁰⁾. Additional transferable recommendations from the national EBP education project and NCEC forum meetings emphasise the importance of the creation of frequent and valued opportunities for students and practitioners to engage in the application of clinical effectiveness processes and the assessment of its impact in practice.

(3) Regulatory/Accreditation Body Professional/Educational Standards

Whilst explicit reference to the term 'Clinical Effectiveness' was not evident from the review of the documents published by regulatory bodies in Ireland, the core components of EBP and quality improvement were stated as essential within professional standards and requirements. Specific reference to these components of clinical effectiveness were outlined within programme competencies and learning outcomes for the majority of health and social care profession standards. This points to implicit recognition by regulatory bodies of the concept of clinical effectiveness through clear statements regarding expected performance in these core areas for the delivery of safe and effective health services. Further consideration by regulators of related competencies in the context of clinical effectiveness is required to augment its integration both into professional standards and practice.

(4) Teaching, learning and assessment methods

Recommended teaching, learning and assessment strategies for clinical effectiveness education derived from national research on EBP education, professional regulatory bodies and the NCEC forum participants included:

- An interprofessional focus to teaching and delivering the core common components of clinical effectiveness education across undergraduate, postgraduate and CPD programmes.
- The use of clinically contextualised, interactive and multi-modal teaching and learning strategies that are perceived as relevant to learners.
- The development and application of teaching strategies according to educational level and/or prior experience of clinically effective practice.
- Use of teaching and learning strategies such as mentoring/role modelling, enquiry and problem-based learning.
- The use of a wide range of validated assessment strategies that can accurately assess competency attainment to promote a consistent evaluation of learning outcomes.
- Use of structured self, peer or inter-professional approaches to the assessment of clinical effectiveness learning activities in practice.

The integration and synthesis of data from numerous key international and national sources led to the generation of a draft competency framework (see Appendix 12). Four domains of competencies for clinical effectiveness education were proposed: (1) EBP, (2) Quality improvement processes, (3) Implementation strategies and (4) Professional practice. This draft underwent further development and modification through stakeholder consultation, the methods and outcomes of which are detailed in Chapters 3 and 4.

Chapter 3- Stakeholder Consultation and Engagement in Development of Competency Framework

Chapter 3. Stakeholder Consultation and Engagement in Development of Competency Framework

3.1 Introduction

A key component of the framework's development was full engagement and consultation with stakeholders and experts from across the healthcare, regulatory and education sectors. Different methods were used to include as many stakeholder groups as possible in the consultation process. To this end, competency development consultation groups were held with a wide range of stakeholders, in addition to eliciting feedback from the NCEC sub-group (Education and Training) on the penultimate framework draft.

3.2 Competency development consultation focus groups

3.2.1 Aims

The specific aims of the focus groups were to:

- Elucidate participants' perspectives on clinical effectiveness education competencies for health and social care professionals.
- Examine proposed competencies and associated indicators of clinical effectiveness education for relevancy, clarity and comprehensiveness.
- Discuss potential teaching and learning modes of delivery and assessment methods for clinical effectiveness education.

3.2.2 Procedures

To assist participants in preparing for the focus groups, an information leaflet (Appendix 8), which provided background context to the project, was sent one week prior to the meeting date. The consultation session began with a 20-minute presentation, which outlined the scope of the project, the findings of the consolidation work completed, an overview of Domain 1 (EBP Competencies) and the specific objectives of the focus group. Participants were requested to complete a brief background questionnaire (Appendix 9) and sign a consent form (Appendix 10) allowing for the audio-recording of the focus groups. The group sessions lasted approximately 90 minutes and were limited to 4 individuals per group as recommended by Krueger⁽⁸¹⁾ and Morgan⁽⁸²⁾ in instances where participants have specialised knowledge and/or experiences to discuss. The sessions were guided by a moderator who used a topic guide (Appendix 11), in conjunction with a copy of the individual domains originating from the consolidation report (Appendix 12) to probe participants' perceptions regarding the:

- (1) Relevance and clarity of (a) the domain statement and (b) the competencies and associated indicators;
- (2) Comprehensiveness of the proposed framework;

(3) Optimal teaching, learning and assessment methods for clinical effectiveness education. Participants were directed to individually review the draft list of domains, competencies and indicators, after which guided discussion on suggested changes was conducted. The focus groups ended with a debriefing session in which the moderator summarised the key points of discussion.

Sampling and Recruitment

A purposeful sampling strategy was used to ensure representation from a range of stakeholders with vested interest in clinical effectiveness education. In conjunction with the NCEC Education and Training Sub-group, an initial list of stakeholders (Appendix 13) was proposed including representatives from:

- Higher Education Institutes, National University of Ireland Recognised Colleges, and Institutes of Technology that offer undergraduate and postgraduate health and social care profession education courses (medicine, nursing, midwifery, dentistry, pharmacy, physiotherapy, psychology, occupational therapy, speech and language therapy, podiatry and radiography).
- Professional training, regulatory and accreditation bodies across the professions e.g. Nursing and Midwifery Board of Ireland, Pharmaceutical Society of Ireland, CORU - Regulating Health and Social Care Professionals, the Irish College of General Practitioners and the Medical Council.
- Members of the National Clinical Effectiveness Committee (NCEC), NCEC sub-groups and participants of the National Clinical Effectiveness Education Fora (2016 and 2017).
- Representatives from the Health Service Executive, HIQA, HEA, HRB, QQI, Patient/Service Users.

The Dean/Clinical Effectiveness Lead (or equivalent) of each organisation was written to by the researchers via the NPSO, DoH and invited to attend (or nominate a representative), a focus group. A list of dates, times and venues were provided, and invitees were asked to e-mail the lead researcher if they were interested in participating. On receipt of an e-mail confirming interest, the lead researcher/postdoctoral researcher forwarded the relevant project information. It was made clear that participation was voluntary. Given the specialised nature of the topic area it is recommended⁽⁸²⁾ to over-recruit by between 20 – 50% of the total number required. In total, 128 participants were invited with 14 focus groups scheduled.

Data analysis

An emergent-systematic focus group design was adopted, wherein, the term ‘emergent’ refers to the initial focus groups that were used for exploratory purposes and ‘systematic’ refers to subsequent groups used for verification purposes⁽⁸³⁾. Note-based analysis, guided by an iterative constant comparison method⁽⁶⁶⁾ was employed and included analysis of notes from the focus group, the debriefing session and summary comments from the moderator. While the focus groups were audio-recorded, the transcripts were primarily used to verify/clarify points of discussion in relation to individual indicators and overarching summary comments. Five of the research team participated in data analysis (EL, HA, SOC, JD, PLW), with two of the researchers (EL, HA) ensuring consistency in the analysis processes. As focus group data were analysed one focus group at a time and were iterative in nature, the analysis of multiple focus groups served as a proxy for theoretical sampling and assisted the researchers in reaching data saturation.

Ethical considerations

Ethical approval was granted by the Social Research Ethics Committee (SREC), University College Cork to conduct the focus groups (Ref: Log 2018-045). A formal email and an information leaflet detailing the purpose of the study, the voluntary nature of participation, the right to withdraw, confidentiality and anonymity processes, the nature and duration of data storage, tasks involved, and PI contact details were provided for focus groups participants. Consent was obtained to audio record the sessions. Data were collected by means of moderator notes and taped semi-structured interviews. All data were anonymised.

3.2.3 Findings of consultation with focus groups

In total 13 focus groups were held with 44 participants from 128 invitees. Focus group sizes ranged from 3-4 participants in keeping with Krueger and Casey’s⁽⁸¹⁾ recommendations. The majority of focus groups were conducted at the Department of Health, Dublin with one focus group held in Cork to facilitate the geographic spread of participants.

Participant Profile

The profile of focus group participants is presented in Table 10. The majority of participants had over 10 years’ experience in their current role (52% n=23), were female (75% n=33), with the majority being employed by HEIs (36% n=16), professional bodies (30% n=20) or HSE (27% n=12). Fourteen health and social care professions were represented, with nursing (25% n=11), medicine (20% n=9) and pharmacy (11% n=5) with most representation. ‘Other’ stakeholders included regulatory body advisors/specialists in patient safety, healthcare audit (HSE), quality improvement (HSE), clinical effectiveness, in addition

to research and guideline programme managers and policy-makers (DoH). The roles of participants varied with the majority involved in either the provision of education to students/trainees within a third level institution (32% n=14) or oversight/regulation/standard setting for student/trainee education (27% n=12).

Table 10 Consultation group(s) profile

Variable	Subgroup	Respondents (n)	Respondents (%)
Years of Experience in current role	<2 years	4	9.09%
	3-5 years	9	20.45%
	6-10 years	5	11.36%
	>10 years	23	52.27%
	Not specified	3	6.82%
Gender	Male	8	18.18%
	Female	33	75.0%
	Not specified	3	6.82%
Employer ²	Health Service Executive (HSE)	12	27.27%
	Department of Health (DoH)	7	15.9%
	Third Level Institution	14	31.78%
	Professional body/organisation	8	18.16%
	HIQA	1	2.27%
	Government Agency	1	2.27%
	Other	3	6.81%
Health and social care profession ²	Nursing	10	22.7%
	Midwifery	2	4.54%
	Medicine	8	18.16%
	Physiotherapy	1	2.27%
	Speech and Language Therapy	2	4.54%
	Pharmacy	5	11.35%
	Dietitian	1	2.27%
	Dentistry	2	4.54%
	Clinical Psychology	1	2.27%
	Ophthalmology	1	2.27%
	Other ³	13	29.51%
Not Specified	1	2.27%	
Higher Education/Professional Training/Regulatory Bodies Represented	NMBI	1	2.27%
	CORU	1	2.27%
	UCC	2	4.54%
	ISCP	1	2.27%
	HPRA	2	4.54%
	Dental Council of Ireland	1	2.27%
	Medical Council	1	2.27%
	ICGP	1	2.27%
	RCSI	1	2.27%
	HIQA	1	2.27%
	PSI	2	4.54%
	UCD	1	2.27%
	ICO	1	2.27%
	IIOP	1	2.27%

²Please note several participants identified themselves in two or more categories so percentages may add to greater than 100%

³ 'Other' includes: patient safety, Healthcare Audit HSE, Quality improvement advisor with HSE, Quality improvement specialist, research methods, Research and guideline programme manager, Project management /policy development, Clinical effectiveness.

	TCD	1	2.27%
	DCU	2	4.55%
Predominant Role	-Oversight/regulation/standard setting for student/trainee education	12	27.27%
	-Provision of education to students/trainees within a third level institution	14	31.81%
	-Provision of education within a clinical setting	10	22.73%
	-Provision of education from a professional body training perspective	11	25.0%
	-Other ⁴	17	38.64%
	-Not Specified	3	6.82%

⁴ Other includes: Provide education for nursing/midwifery nationally, Strategic planning and development for nursing and midwifery, NPSO, design methodology deliver EBP courses on behalf of professional faculties and HSE staff, Policy, delivery of CPD system for pharmacists, regulation of medicines, Building capacity in implementation science, representing ICGP on European Committees of Family Medicine and Physician Health, Carrying out National Healthcare Audit, Implementation of standards in disability services, Policy development, Clinical director, quality and safety management, Clinical assessment in HPRA, Policy development, education and training in a WFP context.

Legend: NMBI- Nursing and Midwifery Board of Ireland, CORU- The Statutory Registration Body of Health and Social Care Professionals, UCC- University College Cork, FPHMI- The Faculty of Public Health Medicine, ISCP- Irish Society of Chartered Physiotherapists, HPRA- Health Products Regulatory Authority, ICGP- Irish College of General Practitioners, RCSI- Royal College of Surgeons in Ireland, HIQA- Health Information and Quality Authority, PSI- Pharmaceutical Society of Ireland, UCD- University College Dublin, NCEC- National Clinical Effectiveness Committee, ICO- Irish College of Ophthalmologists, IIOF- Irish Institute of Pharmacy, TCD- Trinity College Dublin, DCU- Dublin City University.

3.2.4 General feedback on draft framework

Overall, participants found the framework relevant, appropriate and important for developing workforce capacity in clinical effectiveness and were satisfied that the domains reflected the core competencies for clinical effectiveness education overall.

It was noted that while it was prudent to develop a framework which delineated core clinical effectiveness competencies, applicable across the health professions, career role/stage and healthcare service/setting, that the breadth of this scope was challenging in terms of competency indicator development. A number of amendments and underpinning principles were therefore proposed and agreed, and predominantly related to: (1) the clarity of terminology; (2) the sequencing of competency indicators; (3) use of appropriate measurable action verbs for competency indicators; (4) framework application; and (5) competency teaching, learning and assessment approaches (*Please refer Appendix 14 for tracking of amendments made*).

Participants agreed overall with the structure of the framework as presented in the draft. It was noted that the substantive content of the domains did not overlap, however, suggestions were made as to

more appropriate reassignment of individual indicators to different domains. Comments were also made in relation to how the framework could be linked to existent related national health and education publications. Participants suggested that the proposed framework should be 'sense-checked' with three key documents, including the Implementation Guide and Toolkit for National Clinical Guidelines⁽²³⁾, the Framework for Improving Quality in our Health Service⁽²⁴⁾ and the Framework for Public Involvement in Clinical Effectiveness Processes⁽²⁵⁾. Sense-checking with these documents was conducted.

The incorporation of this 'general' feedback provided invaluable direction for principles underpinning the framework, the terminology chosen, and competencies described which will facilitate future work on the development of curricula and programme learning outcomes, in addition to the development and selection of appropriate teaching and assessment tools, across health and social care professions.

3.2.5 Domain Specific Feedback

Domain 1 – EBP

This domain was developed and validated internationally by Albarqouni et al using a modified Delphi technique resulting in a consensus statement for EBP competencies⁽⁶⁾. All competencies were endorsed for adoption by participants of the NCEC education fora and supported by evidence from the empirical scoping review and grey literature. Of note, particular reference during the consultation process was made in relation to the inclusion and attention to skills for the management of uncertainty in clinical decision-making practice. It was highlighted that there is a significant need within current practice to prepare learners/practitioners to manage clinical decisions if high quality evidence does not exist or is contradictory.

Domain 2 – Quality Improvement

Overall, participants agreed with the relevance of quality improvement processes for clinical effectiveness education. Some participants commented that the language used should be amended and reflect the development of competencies for *action* on quality improvement, and not just competencies focused on knowledge development in terms of principles and theories of quality improvement. They suggested the use of verbs related to the *application* of quality improvement processes rather than to merely *recognition* of areas of excellence and for improvement.

Feedback in relation to the domain competency statement was positive. The majority agreed that the statement was clear and appropriately described the overall meaning of the domain. Comments were made concerning the context of clinical effectiveness achievement, with suggestions to use "healthcare" rather than "healthcare systems".

In relation to the first competency within this domain, 'Introductory', comments received referred to the use of examples of principles and methods of quality improvement. Participants argued that the examples provided could limit the understanding of quality improvement processes. The examples provided could also be misinterpreted as the most relevant methods and principles of quality improvement. These examples were removed. Other amendments suggested were: (1) the reassignment of one indicator to the appraise competency; and (2) the substitution of "understanding" with "outline" or "describe" to reflect a measurable action verb from the 'apprehension of knowledge' taxonomy.

The 'Appraise' competency was deemed relevant overall. Comments received highlighted that competencies should prepare learners to *critically appraise* information about outcome of care, and not merely *identify* information. To this end, "identify" was substituted with "critically analyse/appraise".

In relation to the 'Engage' competency, many comments highlighted the need to amend the language used within the indicators to focus on the *application* of knowledge, skills and an active attitude required of learners/practitioners to improve quality of care. The wording in this section was revised with 'application' action verbs included. Participants emphasised the importance of patient/service users in the quality improvement cycle. The inclusion of one competency indicator to address the lack of patient/service user perspectives in promoting quality improvement was suggested. Explicit reference to such perspectives was subsequently included.

Comments in relation to the "reflect" competency alluded to the fact that a reflective process should ultimately result in improved quality of care. One new indicator was suggested to address the need for learners/practitioners to respond appropriately to reflection outcomes. (*Please refer Appendix 14 for tracking of amendments made*)

Domain 3 – Implementation Strategies

There was consensus across all groups that this was an important domain and fundamental to supporting learners to understand effective implementation and integration strategies for "getting best evidence into practice". A number of participants across the groups commented that the content within this domain is an emerging and 'evolving' area which is not as prominent as EBP or quality improvement within professional education. It was commented that its incorporation into health and social care curricula, across all academic levels, is key to incrementally raising awareness, knowledge and skills required for implementing clinically effective care. Central to initial discussions was the use of interchangeable terminology associated with the concept of implementation. Suggestions made included: integrate, translate, "get evidence into practice", apply, disseminate and transfer. Through

an iterative process, agreement on the use of verbs 'implement' and 'integrate' was reached, to denote the necessity of implementing a strategy before it can become integrated into practice.

Feedback in relation to the domain competency statement was positive in that the majority agreed that the statement appropriately and clearly described the overall meaning or essence of the domain.

In relation to the 'Introductory' competency within this domain, several comments highlighted the need to simplify the language used within the indicators and to focus on the essential knowledge and skills required of learners/practitioners. To this end, mention of specific implementation models/theories/frameworks was removed and replaced with an emphasis on the fundamental or core elements of implementation science with an understanding of its contribution in the context of clinical effectiveness. Similar feedback was received in relation to the specificity of including 'behaviour change theory approach', which on review was expanded to reflect the broader concept of change processes for consideration at varying levels (*individual, healthcare setting and organisational*). Finally, the prominence, or lack thereof, of patient/service user perspectives in promoting implementation strategies was queried within the first draft presented. Explicit reference to such perspectives was subsequently included, not only within the introductory competency, but throughout all domain competencies.

The 'Appraise and Apply' competency indicators were deemed relevant, but a number of comments conveyed that they were 'opaque' in their understanding, negatively orientated, required simplification in terms of language used and concepts under consideration. In particular, the 'voice' of the indicators and the orientation of the framework overall was questioned i.e. who the target audience is e.g. individuals vs. organisations, individual vs. collective competence. The importance of measurement and evaluation of implementation strategies and the extent to which they impact on practice was also highlighted. Taking this feedback into consideration, a number of amendments were made including the:

- (1) The removal of one indicator, which was considered irrelevant to the domain;
- (2) Reordering of indicators to reflect the appraisal and apply sequence of EBP;
- (3) Removal of examples within two indicators, which were judged as unhelpful and restrictive in understanding the indicator meaning;
- (4) Inclusion of one indicator to reflect the value of measurement and evaluation practices in the context of implementation strategies for clinical effectiveness;
- (5) Specification of the orientation of the framework as being from an individual learner/practitioner perspective.

In relation to the final competency within the domain – ‘Reflect’ – this originally comprised of one indicator. It was suggested, that in addition to ‘critically reflecting’, which was considered an appropriate and relevant indicator to retain, that a separate indicator was also required to promote ‘action on’ such reflection (*Please refer Appendix 14 for tracking of amendments made*).

Domain 4 – Collaboration

Comments received in relation to this domain highlighted the relevance of collaborative practice in shaping interprofessional teamwork and promoting action for improved care outcomes. Participants commented that collaborative practice is, alongside interprofessional education, essential to ensure implementation of EBP and quality improvement processes. It was hoped that the competencies described would aid learners/practitioners to reflect upon their practice and identify their own collaboration, communication and leadership learning needs required to promote clinical effectiveness.

Specifically, a number of suggestions advocated the relocation of some indicators from the collaboration competency to leadership and vice versa. It was also suggested that the communication competency could be broadened to include the importance of listening and being attentive to patient’s insights, concerns and expectations.

A number of participant comments alluded to the fact that collaboration requires role clarity. Participants suggested the inclusion of one indicator addressing the need for awareness of individual, collective and professional perspectives that influence one’s behaviour and decisions in the context of collaboration.

In relation to the final competency within the domain, leadership, it was suggested, that in addition to ‘understanding’ leadership principles, that a separate indicator was also required to recognise the importance of different leadership styles and the need for commitment from health and social care professionals to support clinical effectiveness (*Please refer Appendix 14 for tracking of amendments made*)

Teaching, learning and assessment method recommendations

There was consensus across all groups regarding the importance of interprofessional education to enhance the teaching of clinical effectiveness competencies. It was also highlighted that educators need to be cognisant of differences in ‘child-centred’ and ‘adult-centred’ learning paradigms to ensure the development and use of appropriate teaching and learning approaches for health and social care professionals. For example, adult learners identify with problems in a real-life setting, which transcends the boundaries of subjects⁽⁸⁴⁾. This makes the adult learner an ideal student for problem solving and

case-based education, in which the learner must use all available knowledge and integrate it to reach his or her goal of solving the problem.

The most reported teaching methods were based on an active learning approach and included; group-based projects, role play/modelling, simulations and case-based studies which all aid in encouraging learners to apply and relate theory to practice. It was also noted that small group teaching and learning sessions are often beneficial to encourage students to become more involved in their learning while also providing an opportunity for learners to ask questions.

Recommended assessment methods included; OSCE assessments, group assessments, peer assessments and workplace assessments. The use of multi-source and '360' assessments were highlighted as providing valuable and constructive feedback on a variety of professional learning activities; for example, students on clinical placements were assessed by all members of the multidisciplinary team in that setting. Self-assessment and self-reflection were also noted as integral parts of assessment in aiding the development of active learning. It was noted that health and social care professionals need to be supported to self-assess their abilities against the competency standards relevant to their role to determine areas in which further development is needed. It was identified that teaching and assessment approaches will vary depending on the level of the programme (undergraduate, postgraduate, CPD), duration of the course and the learner's prior experience of clinically effective processes. The importance of "training the trainers" in clinical effectiveness education was also raised as integral to ensuring optimal learning opportunities for students.

Summary

This chapter presented results from stakeholder consultation and engagement on the development of the competency framework. Stakeholder consultation elucidated participants' perspectives on clinical effectiveness education and competencies for health and social care professionals. Feedback on the proposed framework was provided, with a methodical examination of proposed competencies and associated indicators of clinical effectiveness education conducted. It was agreed that the framework provides core competencies for guiding clinical effectiveness education and is innovative in its configuration, through the combination of EBP, quality improvement processes, implementation strategies and supported by collaborative practices. Potential teaching and learning modes of delivery and assessment methods for clinical effectiveness education were discussed and emphasised the need for interprofessional and adult learning approaches.

Chapter 4- Competency Framework for Clinical Effectiveness Education

Chapter 4. Competency Framework for Clinical Effectiveness Education

4.1 Introduction and Background

The overall and ultimate goal of clinical effectiveness education is to provide health service users with quality outcomes and achieve the triple aim of: (1) improved patient experience of care; (2) improved health of populations; and (3) reduced per capita cost of healthcare⁽²⁶⁾. To ensure that these outcomes are achieved, it is recommended that health and social care professions incorporate the necessary knowledge, skills and attitudes encompassed within clinical effectiveness processes into their professional education programmes and registration requirements.

A clear understanding of the characteristics and core competencies of clinical effectiveness education is required to inform curricula, professional development, and enlighten professional practice for clinically effective care. Definition of competencies is critical in health and social care education, to inform the blueprinting of curricula, learning outcomes, assessment strategies, and graduate attributes^(3, 6).

Components underpinning clinical effectiveness to date include: (1) Evidence Based Practice (EBP); (2) Quality Improvement Processes; and (3) Implementation Strategies.

- EBP is defined as the integration of best research evidence with clinical expertise and patient values⁽⁶⁾.
- Quality improvement processes consist of systematic and continuous actions that lead to measurable improvement in healthcare services and the health status of targeted patient groups. It requires the combined efforts of health and social care professionals, patients and their families, researchers, commissioners, providers and educators to make the changes that will lead to; better patient outcomes, better experience of care, continued development and supporting of staff in delivering quality care⁽⁶⁾.
- Implementation is “the use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings”⁽⁵⁸⁾.

4.2 Competency framework development process

This framework is the result of a three-stage process as outlined in Figure 10.

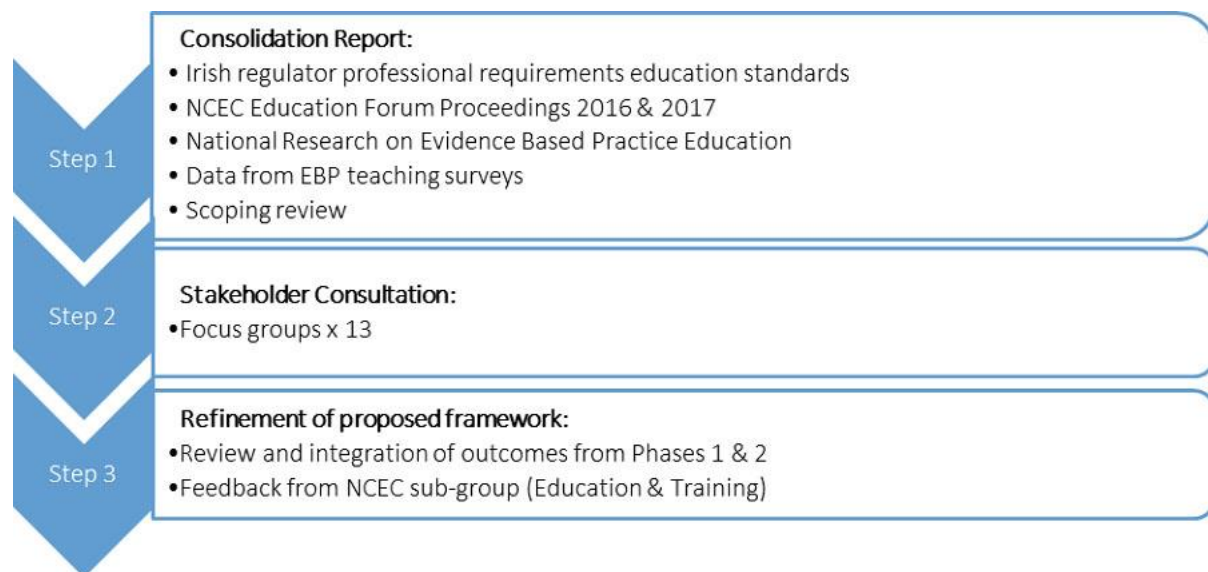


Figure 10 Competency Development Framework Process

In Phase 1, we generated a consolidation report consisting of:

- A document analysis of Irish health and social care regulator professional requirements and education standards in relation to clinical effectiveness; NCEC Education Forum Proceedings 2016 and 2017; and national Research on Evidence Based Practice Education, including data from EBP teaching surveys.
- A scoping review of international literature to map and characterise existing clinical effectiveness education competency frameworks.

The main output from the synthesis of the scoping review and document analysis findings was the creation of proposed clinical effectiveness education competency domains and associated indicators. Observations and recommendations in relation to curriculum considerations, regulatory body standards/requirements, and teaching, learning and assessment methods for clinical effectiveness education were also made.

In Phase 2, we consulted and engaged a wide range of stakeholders in the further development of the competency framework to refine and prioritize the minimum essential clinical effectiveness competencies. Our methodological approach included:

- Consultation focus groups to gain feedback on the framework.
- Cross and 'sense' checking of the framework was performed, particularly in relation to associated national documents pertaining to implementation, quality improvement, public involvement and evidence-based practice.

In Phase 3, integration of the outcomes from Phases 1 and 2, in conjunction with feedback from the NCEC sub-group (Education and Training), resulted in the refinement and presentation of a proposed competency framework for clinical effectiveness education specifying: (1) Framework purpose; (2) Underpinning principles; (3) Framework structure; (4) Description of Competency Domains; and (5) Applying the Framework.

4.3 Framework Purpose

The central aim of this competency framework is to foster a culture of clinical effectiveness in healthcare through describing an approach to competencies that can guide clinical effectiveness education (CEE) for all health and social care professions in a variety of contexts.

The purpose of the framework is also to:

- Further develop capacity for clinical effectiveness in health and social care professional education.
- Inform healthcare educational institution's/bodies of the fundamental topics for clinical effectiveness education.
- Assist the development of health and social care professional curricula and inform professional standards for clinical effectiveness education.
- Further develop capacity and support clinical effectiveness educators in health and social care professional education.
- Support individual health and social care professionals to self- assess, develop and maintain skills, knowledge and attributes required for the provision of clinically effective care in practice.
- Provide a public statement of the health and social care professional role in delivering clinically effective care which can be used as a benchmark for patients/service users, health and social care professionals, professional education/training bodies, regulatory/accreditation bodies and policymakers.

4.4 Underpinning principles

Framework principles

- Similar to the international consensus statement on the EBP competencies⁽⁶⁾, this framework provides the [building blocks for health and social care educators](#) to develop their own curricula,

which meet profession-specific learning outcomes, within the time available, and taking into consideration the previous clinical effectiveness education (CEE) experience of the learners.

- The Framework is designed for all health and social care professionals and the competency domains contained within are [generic and universal in nature](#). This Framework is not a curriculum for CEE, rather it is a [resource for workplace and institutional learning](#), from which individuals, organisations and institutions can develop curricula, educational programmes or training packages.
- The Framework assumes that clinical effectiveness is an [inter-professional collaborative effort](#), and not simply the responsibility of a particular group for particular defined activities.
- The Framework provides direction for the achievement of competencies at an [individual level](#).
- The Framework places the [patient/service user at the centre of health and social care professional learning](#) to realise the goal of clinical effectiveness in practice.
- The Framework is based on [evidence and expert consensus](#). It has been developed using the best available evidence from international literature and identifiable best practice from the experiences and expertise of educators, professional regulators, policy makers and clinicians about what works to deliver clinically effective care.
- This Framework is informed by and should be used in conjunction with the 'Implementation Guide and Toolkit for National Clinical Guidelines'⁽²³⁾, the 'Framework for Improving Quality in our Health Service'⁽²⁴⁾, the 'Framework for Public Involvement in Clinical Effectiveness Processes'⁽²⁵⁾ and the 'Report of Research on Teaching of Evidence Based Practice in Ireland'⁽⁵⁾.

Education principles

- The Framework assumes principles of [adult learning](#), in which the learner and practitioner brings to the fore a mature learner's perspective of life and learning.
- The Framework recognises that [prior learning or current competency](#) of health and social care learners and practitioners in relation to clinical effectiveness education will impact the level at which a competency is attained.
- As the underpinning goal of the Framework is to educate for clinical effectiveness in workplace practice, it is best supported by practice-based learning activities. This framework aims to [support the design of practice-based implementation](#) that takes place as far as possible in the context of the learner's current work or professional environment.

4.5 Framework Structure

This national competency framework for clinical effectiveness education provides an integrative approach to describing the competencies required for clinical effectiveness. Four competency domains highlight the knowledge, skills, attitudes and values that shape the judgments essential for clinically effective practice and include:

- 1) Evidence-based practice;
- 2) Quality improvement processes;
- 3) Implementation strategies;
- 4) Collaborative practice.

The four competency domains are explained individually, though their application is interdependent. The order of the clinical effectiveness competency domains is not hierarchical, that is, it does not reflect the order of their importance or sequence in teaching. 'Context' refers to contextual issues, such as regulatory requirements and educational standards, national healthcare policy, or professional setting that may need to be taken into consideration when applying the framework.

Each Domain of Competence is defined with a statement. The domain statement is the same irrespective of the level of skill or the setting where care is provided. Each of the four domains comprises one or more related key competencies. Each competency consists of indicators that identify knowledge, skills, attitudes and values required to contribute to clinical effectiveness.

4.6 Description of Competency Domains

The four competency domains provide a foundation for clinical effectiveness learning and practice. Figure 1 represents the configuration of the domains and illustrates that the three domains of evidence-based practice, quality improvement processes and implementation form an integrated whole, supported and influenced by collaborative practice.



Figure 1. Proposed Clinical Effectiveness Education Framework

4.6.1 Domain 1. Evidence Based Practice (*Adopted from Albarqouni et al 2018*)

Competency Statement: Learners/Practitioners integrate best current evidence with clinical expertise and patient/service user preferences and values for delivery of clinically effective healthcare.

Indicators:

1.1 To understand fundamental or core concepts associated with EBP, learners/practitioners demonstrate “**introductory**” competencies, and are able to:

- Understand evidence-based practice (EBP) defined as the integration of the best research evidence with clinical expertise and patient’s/service user’s unique values and circumstances.
- Recognise the rationale for EBP.
- For each type of clinical question, identify the preferred order of study designs, including the pros and cons of the major study designs.
- Practice the 5 steps of EBP: Ask, acquire, appraise and Interpret, apply, and assess/evaluate.
- Understand the distinction between using research to inform clinical decision-making versus conducting research.

1.2 To structure clinical questions, learners/practitioners demonstrate “**ask**” competencies, and are able to:

- Explain the difference between the types of questions that cannot typically be answered by research (background questions) and those that can (foreground questions).
- Identify different types of clinical questions, such as questions about treatment, diagnosis, prognosis, and aetiology.
- Convert clinical questions into structured, answerable clinical questions using PICO.

1.3 To identify and recognise relevant sources of research information and evidence, learners/practitioners demonstrate “**acquire**” competencies, and are able to:

- Outline the different major categories of sources of research information, including biomedical research databases or databases of filtered or pre-appraised evidence or resources.
- Construct and carry out an appropriate search strategy for clinical questions.
- State the differences in broad topics covered by the major research databases.
- Outline strategies to obtain the full text of articles and other evidence resources.

1.4 To critically evaluate the integrity, reliability and applicability of health research, learners/practitioners demonstrate “**appraise and interpret**” competencies, and are able to:

- Identify key competencies relevant to the critical evaluation of the integrity, reliability, and applicability of health-related research.
- Interpret different types of measures of association and effect, including key graphical presentations.
- Critically appraise and interpret a systematic review.
- Critically appraise and interpret a treatment study.
- Critically appraise and interpret a diagnostic accuracy study.
- Distinguish evidence-based from opinion-based clinical practice guideline.
- Identify the key features of, and be able to interpret, a prognostic study.
- Explain the use of harm/aetiologies study for (rare) adverse effects of interventions.
- Explain the purpose and processes of a qualitative study.

1.5 To engage with evidence in daily practice, learners/practitioners demonstrate “apply” competencies, and are able to:

- Involve patients/service users in the decision-making process, using shared decision making, including explaining the evidence and integrating their preferences.
- Outline different strategies to manage uncertainty in clinical decision-making in practice.
- Explain the importance of baseline risk of individual patients/service users when estimating individual expected benefit.
- Interpret the grading of the certainty in evidence and the strength of recommendations in healthcare.

1.6 To reflect upon knowledge translation processes, learners/practitioners demonstrate “evaluate” competencies, and are able to:

- Recognise potential individual-level barriers to knowledge translation and strategies to overcome these.
- Recognise the role of personal clinical audit in facilitating evidence-based practice.

Rationale: To improve clinical effectiveness it is essential for learners/practitioners to be able to adopt an evidence-based approach to their practice. To do so, learners/practitioners need to:

- Understand fundamental core concepts associated with EBP.
- Structure clinical questions.
- Identify and recognise relevant sources of research information.
- Critically evaluate the integrity, reliability and applicability of health research.
- Engage with evidence in their daily practice.
- Reflect upon knowledge translation processes.

4.6.2 Domain 2. Quality Improvement processes

Competency Statement: Learners/Practitioners understand and apply quality improvement processes to achieve clinical effectiveness in the context of healthcare.

Indicators:

2.1 To understand fundamental or core concepts associated with quality improvement processes, learners/ practitioners demonstrate “**introductory**” competencies, and are able to:

- Outline the rationale and principles of continuous quality improvement.
- Describe models and methods for continuous quality improvement specific to their practice setting.
- Describe appropriate and up to date performance measurement data in monitoring patient/service user outcomes.

2.2 To identify areas for quality improvement, by analysing the care setting for gaps between local and best practice standards, learners/practitioners demonstrate “**appraise**” competencies, and are able to:

- Appraise the care setting for gaps/differences between local and best practice standards in ascertaining areas of excellence or for improvement.
- Critically analyse information about outcomes of care and quality improvement projects in the care setting.
- Analyse healthcare resources, considering effectiveness, efficiency, cost and access to provide optimal healthcare.

2.3 To apply quality improvement processes into practice, learners/ practitioners demonstrate “engage” competencies, and are able to:

- Undertake regular reviews for continuous quality improvement of their work and that of their team.
- Apply the processes of continuous quality improvement to professional practice.
- Involve patients/service users in continuous quality improvement processes to contribute to clinical effectiveness.
- Measure and evaluate the effect of change and impact of quality improvement interventions.
- Disseminate outcomes of quality improvement to inform practice.

2.4 In considering continuous quality improvement processes, learners/practitioners demonstrate “reflect” competencies, and are able to:

- Critically reflect upon their contribution in facilitating continuous quality improvement processes.
- Respond, as appropriate, to reflection outcomes, to support continuous quality improvement processes.

Rationale: Quality improvement processes should be part of the efforts of learners and practitioners to make changes that lead to clinically effective practice, through better patient outcomes, better experience of care and continued development of staff. The understanding of quality improvement includes clinical effectiveness as a core aspect, alongside person centred, safe and better health and wellbeing care. This competency domain therefore aims to enable learners/ practitioners to:

- Understand fundamental concepts associated with quality improvement.
- Identify areas for quality improvement, by analysing the care setting for gaps between local and best practice standards or identifying variation therein.
- Apply quality improvement processes into practice.
- Reflect upon continuous quality improvement processes.

4.6.3 Domain 3. Implementation of clinical effectiveness into practice

Competency statement: Learners/Practitioners implement and integrate evidence-based practice and quality improvement processes into healthcare to promote clinical effectiveness.

Indicators:

3.1 To understand fundamental and core concepts associated with implementation science, learners/practitioners demonstrate “[introductory](#)” competencies, and are able to:

- Describe core elements of implementation science as they relate to promoting clinically effective practice.
- Outline the contribution that implementation science can make to supporting clinical effectiveness.
- Examine the role of interprofessional perspectives and the sharing of varied sources of expertise in optimising the integration of clinical effectiveness.
- Examine the role of fundamental change processes at different levels (*individual, healthcare setting, organisational*) in facilitating the integration of clinical effectiveness into practice.
- Recognise the importance of integrating an understanding of patient/service user perspectives, local context and organisational culture in adopting clinical effectiveness in practice.
- Appreciate the significance of influencing decision-makers at different levels (individual, healthcare setting, organisational) in adopting clinical effectiveness.

3.2 To identify challenges and enablers for operationalising implementation of best evidence and quality improvement processes into clinical practice, learners/practitioners demonstrate “[appraise and engage](#)” competencies, and are able to:

- Adopt robust, sustainable and pragmatic actions for the timely integration of best evidence decision-making into professional practice.
- Identify potential individual, healthcare setting and organisation level implementation barriers and enablers to optimise the application of clinical effectiveness.
- Participate in a planned approach to the integration of clinical effectiveness into practice through the measurement and evaluation of implementation plans and outcomes.

3.3 In considering implementation processes, learners/practitioners demonstrate “[reflect](#)” competencies, and are able to:

- Critically reflect, using a structured framework(s), on the approach and strategies employed in integrating clinical effectiveness into practice.

- Respond to reflection outcomes by modifying implementation plans as appropriate.

Rationale: Dedicating time and resources to implementation plans and actions is crucial to integrating evidence-based guidelines and quality standard interventions into practice (Implementation Guide and Toolkit, 2018). To do so, learners and practitioners must be able to:

- Understand common core concepts across implementation science.
- Identify challenges and facilitators for operationalising implementation of best evidence and quality improvement processes into practice.
- Reflect upon implementation processes.

4.6.4 Domain 4. Collaborative Practice in the context of Clinical Effectiveness

Competency statement: Learners and Practitioners understand and can apply principles of interprofessional collaboration, communication and leadership to support collaborative practice towards clinical effectiveness processes which promote healthcare that is evidence based, effective and consistent.

Indicators:

4.1 To support interprofessional “collaboration”, learners/practitioners are able to:

- Demonstrate awareness of individual, collective and professional perspectives that influence an individual’s behaviours and decisions.
- Engage in a collaborative learning environment to support clinical effectiveness as an integral part of the day-to-day provision of care.
- Demonstrate open communication, mutual respect, and team-based decision-making to improve patient/service users’ outcomes.
- Contribute to collaborative practice through advancing the interdependent working relationships amongst health and social care professionals.

4.2 To “communicate” appropriately in professional practice, learners/practitioners are able to:

- Demonstrate effective oral, non-verbal and written skills for delivering and explaining complex data, information and evidence to a diverse range of individuals, including patients/service users and health and social care professionals.
- Demonstrate active listening skills to understand information from a variety of sources.

- Demonstrate openness in disclosing the potential benefits and risks associated with healthcare interventions.
- Demonstrate an ability to be attentive to patients/service users through careful analysis of their insights, concerns and expectations.
- Negotiate with patients/service users in a shared decision-making approach for clinically effective processes.

4.3 To determine best “leadership” approaches to achieve clinically effective processes, learners/practitioners are able to:

- Recognise individual accountability within one’s own scope of practice to promote clinical effectiveness.
- Outline leadership principles that support collaborative practice for clinically effective care.
- Recognise the importance of different leadership styles and commitment from health and social care professionals to support clinical effectiveness.
- Act as a change agent/champion in the implementation of clinical effectiveness processes.

Rationale: Effective professional relationships and patient/service user involvement are key characteristics of collaborative practice towards clinical effectiveness. Learners/practitioners must be able to:

- Demonstrate collaborative relationships;
- Use communication for explaining complex information and negotiating shared decisions with colleagues and patients/service users;
- Determine best leadership approaches in any given situation to achieve clinically effective processes.

4.7 Applying the framework

This competency framework for Clinical Effectiveness Education has been designed for application *by* a variety of stakeholders/learners *in* a variety of health and social care contexts.

Curriculum Considerations

Health and social care professional curricula need to explicitly demonstrate the integration of clinical effectiveness competencies throughout clinical and academic learning contexts. Current professional curricula may already cover some aspects of this clinical effectiveness education framework. Therefore,

this framework can be used as a starting point for delineating existing material in relevant curricula, by mapping whether clinical effectiveness competencies are reflected in programme content and learning outcomes. Such analysis provides educators with a pragmatic approach to enhancing existing parts of a curriculum rather than viewing clinical effectiveness as a new subject to teach. The prior experience of the learner in relation to clinical effectiveness needs to be considered in curriculum design with learning activities and assessments tailored accordingly. The development and conduct of evaluation plans with relevant stakeholders (e.g. clinicians, patients/service users, students, academic/clinical educators, and health regulators) is recommended to determine the usefulness and quality of the curriculum in achieving learning outcomes and graduate/clinician attributes related to clinical effectiveness.

Teaching and Learning Strategies

A number of teaching and learning strategies were repeatedly emphasised across all data sources as optimal for clinical effectiveness education and included:

- (1) Active learning approaches such as problem and case-based education, in which the learner must use all available knowledge and integrate it to reach his or her goal of solving the problem.
- (2) Interprofessional group-based learning which encourages students to become more involved in learning which is reflective of professional practice dynamics.
- (3) Multi-modal teaching strategies that engage a number of learning 'entry points' and are perceived as *relevant* to learners.
- (4) Experiential learning activities that provide opportunities to *apply* clinical effectiveness knowledge and skills (simulation, role play, patient/service user interactions, clinical effectiveness structured learning moments within the practice environment while on clinical placements).

Assessment Methods

The development of appropriate and encompassing assessment plans for clinical effectiveness competencies is challenging but necessary for monitoring learners' progress in each of the competencies. Optimal assessment principles as noted within education literature and advocated in similar health and social care professional competency frameworks and curriculum guides e.g. WHO Patient Safety Curriculum Guide: Multi-professional Edition (2011) point to assessments which:

- Drive learning in the intended direction of meeting the exit programme learning outcomes.

- Have a strong formative element, with regular opportunities for constructive feedback throughout a programme.
- Are integrated with examinations of clinical competence and professional behaviours.
- Are developed with the expectation that they will meet quality assurance standards.
- Are feasible, fair, acceptable and motivating.
- Incorporate different assessment types including structured self, peer or inter-professional approaches to the assessment of clinical effectiveness learning activities in practice.

Overall Report Conclusions

Overall Report Conclusions

Embedding a culture of clinical effectiveness in health and social care requires, in the first instance, incorporating the necessary knowledge, skills and attitudes into health professional education programmes, standards and registration requirements. In this report, commissioned by the NPSO, it is proposed that a competency framework for clinical effectiveness education in Ireland be used to enhance awareness of the significance of clinical effectiveness and inform academic curricula, professional development programmes and professional standards.

To develop the proposed competency framework, three phases of research were conducted. Findings from these phases addressed relevant components of clinical effectiveness education, as follows:

- Phase 1 – Consolidation Report (Evidence from Irish regulator professional requirements education standards, NCEC Education Forum Proceedings 2016 and 2017, National Research on Evidence Based Practice Education, EBP teaching survey and Scoping review).

Within Irish professional/regulator standards and requirements, EBP and quality improvement were central concepts across professions. The international literature focused on the need for clinical effectiveness competencies to focus on EBP, quality improvement processes and implementation science strategies. The incorporation of educational theories, in particular adult learning principles, mapping tools and scaffolding of competency acquisition according to prior learning experiences, were deemed valuable in structuring curricula overall to facilitate meaningful integration of clinical effectiveness competencies. Recommended teaching, learning and assessment strategies included an interprofessional focus with the use of active learning strategies. The integration and synthesis of data from these key international and national data sources led to the generation of a draft competency framework. Four competency domains for clinical effectiveness education were proposed as a result of the consolidation report and included: (1) EBP; (2) Quality improvement processes; (3) Implementation strategies and (4) Professional practice.

- Phase 2 - Stakeholder Consultation and Engagement (Evidence from 13 focus groups with representation from 14 health and social care professions and stakeholders involved in the provision of education to students/trainees or oversight/regulation/standard setting for student/trainee education).

Overall, participants found the framework relevant, appropriate and important for developing workforce capacity in clinical effectiveness and were satisfied that the domains reflected the core competencies for clinical effectiveness education overall. Specific feedback for each competency domain was also analysed resulting in a number of amendments, as reported in chapter 3. Feedback on teaching and learning modes of delivery for clinical effectiveness education emphasised the need for interprofessional education and the application of adult learning theory principles including active learning approaches. It was advised that teaching and assessment approaches should vary depending on the level of the programme (undergraduate, postgraduate, CPD), duration of the course and the learner's prior experience of clinically effectiveness processes. Recommended assessment methods varied. Self-assessment and self-reflection were noted as integral parts of assessment in aiding the development of active learning.

- Phase 3 - Refinement of Proposed Competency Framework for Clinical Effectiveness Education

Further integration of the outcomes of Phases 1 and 2, in addition to feedback from the NCEC on the penultimate draft, resulted in a proposed competency framework for clinical effectiveness education. The report of the framework presents: (1) Framework purposes; (2) Underpinning principles; (3) Framework structure; (4) Description of Competency Domains; and (5) Framework Applications.

Strengths/Limitations

In order to accomplish the project aims, a multistage research approach that combined various research methods and data sources was conducted. The use of multiple data sources, through quantitative and qualitative approaches, allowed robustness of results through comparative analysis. The chosen methods complemented each other and provided a multi-faceted and evidence-based understanding of requirements for clinical effectiveness education. The presented framework was informed by a rigorous scoping review that complied with standards for conducting and reporting of scoping reviews⁽⁴⁴⁾. It provided an overview of what is known and what are the trending topics in empirical and grey literature about clinical effectiveness education. All competencies were reviewed and refined by experts from different health and social care professions and settings, further enhancing the credibility of the proposed framework. To the project team's knowledge, this is the first proposed competency framework for clinical effectiveness education internationally.

The search for empirical and grey literature was limited to publications from 2008 onwards. While publications which fell outside of this period were not included, given that clinical effectiveness, as a

term and concept, is relatively new to the healthcare lexicon, we are confident that relevant literature was obtained. In terms of the representativeness of all stakeholders with a vested interest in clinical effectiveness, patient/service user representation was absent despite invitations issued. The research team would advocate the further validation of the framework from the patient/service user perspective.

Considerations for educators, practitioners and regulators

Educators:

This competency framework can assist educators in designing and reviewing curricular content (across academic levels) in relation to clinical effectiveness competencies. The framework may also be used to structure continuing development programmes, specific for training staff delivering clinical effectiveness education in both academic and clinical settings. Educators charged with responsibility for health professional education (university/academic staff, regulatory body education officers and practice/health service clinical educators) should receive training in clinical effectiveness education to enhance both competence and confidence in identifying learning opportunities and accessing relevant resources in a variety of contexts and settings. Specifically, formal opportunities, such as a 'train the trainers' model, can support educators in acquiring or refining their knowledge and skill-set in facilitating teaching of the core components of clinical effectiveness education.

Practitioners and employers:

To enable clinically effective practice, continuing professional development may be framed around EBP, quality improvement, implementation and collaborative practice issues using the framework. Specific training can be based upon the framework and embedded at organisational/policy level. The importance of creating frequent and valued opportunities for students and practitioners to engage in the application of EBP and the assessment of its impact in practice must be emphasised and actioned.

Regulators:

There will be an increasing awareness and requirement by regulators to ensure core competencies for clinical effectiveness are demonstrated as part of licensing and maintenance of licensing for health professionals. The framework will be useful in determining how to guide members to integrate clinical effectiveness competencies into professional standards.

Dissemination

Frameworks are intended to provide a clear direction for practice and help practitioners to focus on skills required to deliver optimal health and social care services. However, the literature cites ‘framework fatigue’, which consists of “the sense that with so many standards, guidelines, and frameworks being produced across the health and social care sector, practitioners, lecturers and managers are in danger of being ‘swamped’”⁽⁸⁵⁾. To avoid “framework fatigue”, it is recommended that an effective dissemination plan is required, with protected time and resources to undertake work associated with operationalising the framework document also necessary⁽⁸⁵⁾. To this end the dissemination plan includes the following actions:

- A fundamental component of dissemination is raising awareness. It is therefore proposed, with prior agreement from the DOH National Patient Safety Office, to present and publish this framework, and the research findings, nationally and internationally.
- At a national level, we aim to launch the framework at the NPSO Patient Safety Conference (2019). From an international perspective, it is proposed that the framework will be presented at the Teaching Evidence Based Healthcare Conference in Sicily, 2019. As stated in the empirical, grey literature and consultation groups, “clinical effectiveness requires an interprofessional effort”. For this reason, we also intend to present the framework at the Annual European Conference of Interprofessional Practice and Education (EIPEN 2019).
- The report will be available for online viewing on the NCEC website. It is intended that 2 articles will also be published:
 - Scoping review report “Core clinical effectiveness competencies: a scoping review”.
 - Short report on the methodological approach: “Development of a Competency Framework for Clinical Effectiveness Education: an interprofessional collaborative approach”
- Support from Higher Education Institutes, professional training bodies, health and social care regulators is required for effective dissemination. A national coordinated approach, facilitated by the NCEC, in the engagement of academic and clinical educators is recommended to progress the application of the competency framework across professions and settings.

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Appendix 1. Regulatory body requirements

Regulator Name	Document Details	Standards and Requirements Excerpts related to clinical effectiveness (EBP, QI, IS)	Specific Competencies or Domains	Learning Outcomes/Indicators/ Indicative Content	Teaching/Assessment Strategies	Curriculum Considerations
Nursing and Midwifery Board of Ireland (NMBI)	<p>1) Code of Professional Conduct for Each Nurse and Midwife (2014)⁽¹³⁾</p> <p>2) Practice Standards for Midwives (2015)⁽¹⁴⁾</p> <p>3) Midwife Registration Programme Standards and Requirements Fourth Edition (2016)⁽¹⁶⁾</p> <p>4) Post Registration Nursing and Midwifery Programmes Standards and Requirements (2015)</p> <p>5) Nurse Registration Programme Standards and Requirements Fourth Edition (2016)⁽³⁹⁾</p>	<p>1.) "You should deliver safe and competent practice based on <i>best available evidence</i> and <i>best practice standards</i>" (p. 21).</p> <p>2) "You should provide safe, competent, kind and compassionate professional care which is informed by the <i>best available evidence, your own expertise and the experiences, preferences and values of the woman</i>" (p. 8).</p> <p>2) "You should support <i>quality measures such as audits</i> of practice and research projects that are being conducted ethically" (p. 18).</p> <p>4) "The graduate should be able to demonstrate relevant knowledge to adopt systematic approaches to nursing practice based on best available evidence" (p. 17).</p> <p>5) "Plan and prioritise person-centred nursing care (including selecting interventions based on best evidence and identification of desired goals with the person)" (p. 25).</p>	<p>3) The midwife uses comprehensive knowledge, skills and professional behaviours to provide safe, competent, kind, compassionate and respectful care. The midwife keeps up-to-date with current midwifery practice by undertaking relevant continuing professional development (p. 24).</p>	<p>3) Research, audit in practice: -Identifying and accessing robust sources of knowledge -The research process/methods -Audit cycle and its potential impact on clinical practice -Critical review and analysis of research findings and application to practice - Promoting and implementing evidence-based innovation in midwifery practice -Quality assurance/initiatives to include knowledge and skills to undertake clinical audit (p. 38).</p>	<p>3) Not specific to Clinical Effectiveness of components therein</p>	<p>3) The curriculum model chosen should be dynamic and flexible to allow for changes in midwifery practice, the delivery of maternity services and the continued development of evidence-based practice (p. 51).</p> <p>4) Curriculum design and development reflect research and evidence based educational theory and health care theory, policy and practice. National and International benchmarks should inform curriculum development (p. 12).</p>

Regulator Name	Document Details	Standards and Requirements Excerpts related to clinical effectiveness (EBP, QI, IS)	Specific Competencies or Domains	Learning Outcomes/Indicators/ Indicative Content	Teaching/Assessment Strategies	Curriculum Considerations
Medical Council of Ireland	<p>1) Guide to Professional Conduct and Ethics for Registered Medical Practitioners (2016)⁽¹²⁾</p> <p>2) Professional Competence Guidelines for Doctors (2011)⁽¹⁰⁾</p> <p>3) Medical Education, Training and Practice in Ireland 2008-2013 A Progress Report⁽¹¹⁾</p>	<p>1) You should make sure as far as possible that the services and treatments you provide are safe and comply with the standards of the profession. You should promote a culture of patient safety within the context of the wider healthcare system. (p. 42).</p> <p>1) As far as possible, you should make sure that any treatment, medication or therapy prescribed for a patient is safe, evidence-based and in the patient's best interests (p. 31).</p> <p>1) Competent doctors review and reflect on their activity levels and outcomes so they can identify and fix any problem areas within their practice, and engage with quality improvement initiatives to help improve health services and care for all patients (p. 12).</p>	<p>2) Patient safety and quality of patient care should be at the core of the health service delivery that a doctor provides. A doctor needs to be accountable to their professional body, to the organisation in which they work, to the Medical Council and to their patients thereby ensuring the patients whom they serve receive the best possible care (p. 40).</p>	<p>2) The doctor maintains professional competence to achieve the outcome of good professional practice which contributes to patient safety and quality of patient care (p. 39).</p>	<p>3) The curriculum design reflects a variety of methods of teaching and learning and provides a balance between; emphasis on developing students' communication, team-working and interpersonal skills, problem-based learning approaches, development of early patient-contact programmes, systems-based/small-group/ tutorial teaching, self-directed learning, research exposure and opportunities, exposure to clinical audit, an emphasis on the skills for lifelong learning (p. 38).</p> <p>3) Students should be assessed using; appropriate assessment of all elements of the curriculum, an appropriate balance between formative and summative assessment, use of a range of different assessment methods and an appropriate use of continuous assessment and team-based assessments (p. 28).</p>	<p>3) An integrated, systems-based approach to curriculum design and development (p. 28).</p>

Regulator Name	Document Details	Standards and Requirements Excerpts related to clinical effectiveness (EBP, QI, IS)	Specific Competencies or Domains	Learning Outcomes/Indicators/ Indicative Content	Teaching/Assessment Strategies	Curriculum Considerations
The Pharmaceutical Society of Ireland (PSI)	<p>1.Core Competency Framework for Pharmacists (2013)⁽¹⁸⁾</p> <p>2.Code of Conduct for Pharmacists (2009)⁽¹⁷⁾</p> <p>3. Future Pharmacy Practice in Ireland (2016)⁽¹⁹⁾</p>	<p>1) A pharmacist must employ his/her professional competence, skills and standing in a manner that brings health gain and value to the community and the society in which he/she lives and works (<i>No page numbers</i>).</p> <p>2) The practice by a pharmacist of his/her profession must be directed to maintaining and improving the health, wellbeing, care and safety of the patient.</p>	<p>1) A pharmacist must maintain a level of competence sufficient to provide his/her professional services effectively and efficiently.</p>	<p>1) Endeavour to ensure the safety of the patient in all circumstances.</p> <p>1) Actively influence and participate in health policy development, review and revision.</p> <p>1) Maintain, develop and update competence and knowledge of evidence-based learning, which includes CPD and CE (Continuing Education).</p> <p>1) Undertake regular reviews, audits and risk assessments, both to improve quality of service and to inform learning requirements and possible deficits.</p>	<p>Not specific to Clinical Effectiveness of components therein.</p>	<p>A revised structure of the qualification was developed, the first students having followed the new curriculum will qualify in 2020 that allows for the dispersal of practice placements throughout the five years of the qualification and, for the first time, will enable students to gain experiences of varying durations in the three main pharmacy practice settings of community, hospital and industry. This change to the pharmacist qualification is intended to benefit the health system through the training of pharmacists in a more rounded and integrated manner.</p>

Regulator Name	Document Details	Standards and Requirements Excerpts related to clinical effectiveness (EBP, QI, IS)	Specific Competencies or Domains	Learning Outcomes/Indicators/ Indicative Content	Teaching/Assessment Strategies	Curriculum Considerations
The Dental Council of Ireland	<p>1) Scope of Practice (2014)⁽²¹⁾</p> <p>2) Guidelines for Undergraduate Dental Education (2005)</p>	<p>1) Safeguard the health and safety of your patients (p. 4).</p> <p>1) A dentist is required to have a clear understanding of his/her legislative, social and economic environment while balancing changes within these environments with ethical principles and current scientific evidence (p. 11).</p> <p>2) Every DHP shall be motivated by the three-fold aim of safeguarding the health of patients, promoting the welfare of the community and maintaining the honour and integrity of the dental profession (p. 2).</p>	Not specific to Clinical Effectiveness of components therein	Not specific to Clinical Effectiveness of components therein	2) A variety of educational approaches, including traditional didactic teaching methods, small group case discussions and, clinical training using simulation and treatment of patients under supervision (no page number).	Not specific to Clinical Effectiveness of components therein.

Regulator Name	Document Details	Standards and Requirements Excerpts related to clinical effectiveness (EBP, QI, IS)	Specific Competencies or Domains	Learning Outcomes/Indicators/ Indicative Content	Teaching/Assessment Strategies	Curriculum Considerations
CORU- Dietitians/ Occupational Therapists/ Physiotherapists/ Radiographers and Radiation Therapists/ Social Workers/ Speech and Language Therapists/ Optometrists.	1) Criteria and Standards of Proficiency for Education and Training Programmes (2014) ⁽⁹⁾	<p>The interests of the public need to be safeguarded by fostering high standards of professional education, training and competence in the dietetic profession (p. 6).</p> <p>Understand the need to maintain the highest standards of personal/professional conduct (p. 19).</p>	<p>Be able to evaluate, audit, and review practice (p.29).</p> <p>Provision for quality services (p. 25).</p>	<p>Understand the role of continuing professional development and demonstrate commitment to life-long learning.</p> <p>Analyse and critically evaluate the information collected (p. 24).</p> <p>Use a range of research and evaluative methodologies, including evidence-based practice Research (p. 25).</p> <p>Understand the principles of quality assurance and quality improvement (p. 29).</p> <p>Be aware of the role of audit and review in quality management, including the use of appropriate outcome measures (p. 29).</p>	<p>The curriculum design reflects a variety of methods of teaching and learning and provides a balance between lectures, tutorials, workshops, small group interactions, demonstrations, practical work and self-directed learning (p. 13).</p> <p>Assessment of learning is a continuous process and demonstrates a balanced and integrated distribution throughout the programme. Students should be assessed using published criteria, regulations and procedures which are applied consistently (p. 14).</p>	<p>Curriculum design should reflect current evidence-informed and research based educational theory and dietetics practice. The curriculum model chosen should be dynamic and flexible to allow for changes in the dietetics profession, health and social care delivery and the development of evidence based/informed practice (p. 13).</p> <p>Curriculum design and development is guided by professional knowledge of the subject that is evidence based (p. 13).</p>

Appendix 2. NCEC Education Forum (2016)



NCEC Subgroup on Education and Training

Exploratory meeting with Postgraduate education organisations on education and training in Clinical Effectiveness

Date: Thursday November 3rd 2016, Department of Health, Hawkins House, Hawkins St, Dublin

Moderators: Prof Dermot Malone, Dr Niamh O'Rourke

Facilitators: Dr Tamasine Grimes, Patrick Glackin, Marie Kehoe O'Sullivan, Dr Eve O'Toole, Dr Fidelma Fitzpatrick

Participants:

- Multidisciplinary group of health and social care professionals responsible for the provision of postgraduate education in Ireland.
- Professional bodies representing medicine, nursing/midwifery and allied health professionals.
- Key stakeholders in clinical effectiveness.

Purpose:

- To commence process of engagement with key stakeholders to examine opportunities for clinical effectiveness education and training (for translation of evidence into practice).
- To discuss current and future provision of education relevant to clinical effectiveness/evidence-based practice in Ireland (commencing with postgraduate education).
- To identify mutual goals/areas of interest.
- To identify core competencies/educational goals to enable health service staff to support the clinical effectiveness agenda.
- To discuss potential for joint (multidisciplinary) team learning.
- To discuss principles for inclusion in curriculum/syllabus.
- To identify opportunities within the current curriculum.
- To discuss requirements of the regulators/professional bodies in this curriculum.
- To explore vision for clinical effectiveness training and capacity building in Ireland.

Key questions for discussion: Agree common goals/areas of interest:

- Competencies: What might the core competencies in a clinical effectiveness curriculum look like?
- Barriers and facilitators: What are the barriers to progressing in this direction? What might facilitate Progressing in this direction?
- What relevant non-clinical scholarly activities are common to all our professions?
- Current practice: How has your organisation approached this to date?

Background

The National Clinical Effectiveness Committee (NCEC) is a Ministerial Committee established in 2010 with multidisciplinary representation which provides the oversight for the national clinical effectiveness agenda. The NCEC, through its terms of reference, provides a framework for national endorsement of clinical guidelines and audit to optimise patient and service user care. Clinical effectiveness processes include (but are not limited to) clinical guidelines, clinical audit and clinical practice guidance. Further information is available on the NCEC website:

<http://health.gov.ie/national-patient-safety-office/ncec/>

The vision of the NCEC is that of the Commission on Patient Safety and Quality Assurance '*Knowledgeable patients receiving safe and effective care from skilled professionals in appropriate environments with assessed outcomes*'.

Key Definitions

Evidence based medicine (EBM)

Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values (Sackett 1996).

Clinical effectiveness

Clinical Effectiveness is a quality improvement approach which promotes cost effective healthcare that is evidence-based, with the aim of subsequent improved clinical decision making and clinical outcomes. As a term, its roots lie in the development of concepts of clinical efficacy in the 1970s. The dictionary definition of 'efficacy' is 'effectiveness and efficiency.' As concepts of efficacy have evolved over time, so have associated definitions and terminology. Clinical efficacy can be defined as 'the probability of benefits to individuals in a defined population from a medical technology or system applied for a given medical problem under ideal conditions of use.' The term 'clinical effectiveness' reflects performance of a medical technology or system applied under ordinary, rather than ideal conditions (Fryback 1991).

Clinical effectiveness is defined as the application of the best knowledge, derived from research, clinical experience and patient preferences to achieve optimum processes and outcomes of care for patients. The process involves a framework of informing, changing and monitoring practice (Department of Health UK, 1996).

Clinical effectiveness and clinical audit are essential components of the Clinical Governance agenda to improve and assure quality. As with all aspects of Clinical Governance, clinical effectiveness is about improving patients' total experience of their healthcare. Clinical effectiveness is aimed at making clinical practice more explicitly evidence based, with the goal of improving the effectiveness of clinical practice and service delivery (Ashford and St Peters Hospitals, NHS Trust 2008).

Clinical effectiveness is about doing the right thing at the right time for the right patient (Royal College of Nursing 1996) and is concerned with demonstrating improvements in quality and performance:

- **the right thing** (evidence-based practice requires that decisions about healthcare are based on the best available, current, valid and reliable evidence)
- **in the right way** (developing a workforce that is skilled and competent to deliver the care required) - at the right time (accessible services providing treatment at the point of need)
- **in the right place** (location of treatment /services)
- **with the right outcome** (clinical effectiveness/maximising health gain) (Worcestershire NHS, 2008). Clinical effectiveness is thinking critically about what you do, questioning whether it is having the desired result and making a change to practice if required. It is based on evidence of what is effective in order to improve patient care and experience (NHS Scotland 2007). The NHS Executive has defined clinical effectiveness as: The extent to which specific clinical interventions when deployed in the field for a particular patient or population do what they are intended to do, that is, maintain and improve health and secure the greatest possible health gain from the available resources. Clinical effectiveness has three distinct parts:
 - Obtaining evidence – from research, either published in journals or available on databases; from national level studies based on research, for example, clinical guidelines, systematic reviews or national standards.
 - Implementing the evidence – by changing practice to include the research evidence and, where possible, locally adapting national standards or guidelines.
 - Evaluating the impact of the changed practice and readjusting practice as necessary, usually through clinical audit and patient feedback.

Clinical effectiveness is made up of a range of quality improvement activities and initiatives including:

- Evidence, guidelines and standards to identify and implement best practice
- Quality improvement tools (such as clinical audit, evaluation, rapid cycle improvement) to review and improve treatments and services
- Information systems to assess current practice and provide evidence of improvement
- Assessment of evidence as to whether services/treatments are cost effective
- Development and use of systems and structures that promote learning across the organisation (NHS Scotland 2007).

Reports from workshops groups (November 3rd 2016)

1) What might the core competencies in a clinical effectiveness curriculum look like?

- Ability to formulate a clinical question (PICO).
- Ability to conduct a comprehensive literature search.
- Ability to critically appraise a range of study methodologies (Qualitative and Quantitative).
- Ability to implement findings as applied to your practice.
- Guideline development.
- Audit/dissemination.

2) Core competencies in a clinical effectiveness curriculum – what are the barriers to progressing in this direction?

- Getting time in the curriculum.
- What do you drop?
- Integrate the competencies.
- Resources.
- Change in teaching style.
- Competence of educators.
- Lack of educators.
- No protected time.
- Services busy.
- Relying on good will.
- Need to acquire professional knowledge differently to establish life-long learning.
- Inter-professional.

3) Core competencies in a clinical effectiveness curriculum - What might facilitate progressing in this direction?

- Has to be interactive (not didactic).
- Need face-to-face mentoring and workshops.
- Cautious about e-learning in isolation.
- Mentors for each area.
- Address lack of confidence.
- Ideally blended.
- Time resource.
- Tele-mentoring, virtual faculty.
- Remote access.
- Critical engagement/activities/portfolio.
- Peer learning.
- Engaging universities as research hubs.
- Balance with practice.
- Protected time.
- Organisational buy-in.
- Develop an 'Evidence Base' around delivery.
- Engagement and build on what exists in PGTBs.
- Link with clinical audit.
- Cross disciplinary projects.
- A journey, not a destination.
- Approval from regulatory bodies and colleges.

4) What relevant non-clinical scholarly activities are common to all our professions?

- Retrieval of evidence/critical appraisal.
- Leadership training – individual team.
- Journal club.
- Patient safety and quality of care.
- Communication skills - interpersonal communication skills.
- Professionalism and accountability.
- In-service days.
- CPD - but different requirements in all professions.
- National conference - specialist and MDT.

- Audit.
- Require dissertation – evidence-based research activity (this can be different across professions).

5) What would you like to see develop from the discussion today?

- Greater integration of EBP in undergraduate/postgraduate education. Increased emphasis on clinical effectiveness.
- Foundation of a shared understanding on Postgraduate education. Identify clear indications on how postgraduate education could tackle embedding clinical effectiveness into curricula.
- New curriculum. Multidisciplinary. Core clinical and managerial competencies.
- Standardised education and training programmes to support NCEC approved guideline implementation. Multidisciplinary involvement is key.
- I would like to see the development of an Irish evidence-based healthcare group to deliver training to postgraduates in healthcare in the use of evidence-based practice and audit.
- More joined-up thinking.
- Raised awareness of clinical effectiveness agenda. Incorporation of clinical effectiveness in postgraduate training curriculum.
- Needs assessment of tailored programme in postgrad healthcare. Developing an inter-professional programme/programme modelled on CEBM with ongoing research on EBM in Irish setting.
- Integration and transfer of information and decisions with statutory bodies.
- To build on what is available rather than start from scratch. Terms of delivery of Clinical Effectiveness practice education/planning/consolidation. Do not reinvent the wheel-find out what is what. Must be multi- professional planning –not uni-professional.
- A multidisciplinary approach to implementation of collaborative training on a) existence of guidelines b) EBP and c) development of guidelines.
- Understanding of work of the NCEC mechanism to link on standards development/public protection/safe practice.
- Clearer focus on implementation synergy between bottom up/top down approach.
- A coordinated interdisciplinary approach to education/professional development activities related to clinical effectiveness/guideline development/translation into practice.
- More interdisciplinary fora and I think this is a great step forward.
- Scope to identify post grad CPD on EBP/guidelines. Support for clinicians to engage in development of therapy guidelines. Practical support for implementation projects.
- Interdisciplinary – involvement of our discipline in clinical effectiveness developments. Voice for progressing EBP research into clinical practice (implementation science).
- Core competencies/curriculum for EBP and clinical effectiveness.
- Commonality of purpose.
- Integrate education at all levels (undergraduates, postgraduates and advanced practice) and in a multidisciplinary way.

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Appendix 3. NCEC Education Forum (2017)



An Roinn Sláinte
Department of Health

NCEC Education Forum Meeting 2017

Date: Thursday November 9th 2017.

Venue: Department of Health, Hawkins House, Hawkins St, Dublin

Moderators: Prof Dermot Malone, Dr Niamh O'Rourke

Chair: Dr. Patrick Glackin

Facilitators: Dr Tamasine Grimes, Ms Marie Kehoe O'Sullivan, Dr Eve O'Toole.

Participants:

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Clinical effectiveness has three distinct parts:

- Obtaining evidence – from research (either published in journals or available on databases), from national level studies based on research, for example, clinical guidelines, systematic reviews or national standards.
- Implementing the evidence – by changing practice to include the research evidence and, where possible, locally adapting national standards or guidelines.
- Evaluating the impact of the changed practice and readjusting practice as necessary, usually through clinical audit and patient feedback.

Clinical effectiveness encompasses a range of quality improvement activities and initiatives including:

- Evidence, guidelines and standards to identify and implement best practice
- Quality improvement tools (such as clinical audit, evaluation, rapid cycle improvement) to review and improve treatments and services
- Information systems to assess current practice and provide evidence of improvement
- Assessment of evidence as to whether services/treatments are cost effective
- Development and use of systems and structures that promote learning across the organisation (NHS Scotland 2007).

Further information on Clinical Effectiveness is available on the NCEC website: <http://health.gov.ie/national-patient-safety-office/ncec/>

2nd Clinical Effectiveness Education Forum

Following contextualisation presentations (participants (n=35) were divided into 5 groups each with representation across health and social care professions, professional bodies and NCEC stakeholders.

The following discussion points/questions were considered:

- Competency framework and learning outcomes ('the what')
- Education; teaching and learning (the 'how')
- Assessment: How can we best assess achievement of clinical effectiveness competence?
- Next steps: how do we integrate?

All groups provided written and verbal feedback for each discussion point which was transcribed verbatim and subsequently collapsed into common categories.

Next steps (2018-2019)

Develop competency framework for clinical effectiveness education in Ireland.

Collapsed categories from consultation groups (November 9th2017)

Competency framework and learning outcomes ('the what')	Education, teaching and learning (the 'how')	How can we assess clinical effectiveness education?	How do we integrate?
<p>EBP</p> <ul style="list-style-type: none"> • Endorsement of DELPHI study recommendations (EBP competencies) • Agree/integrate international core EBP competencies (Apply, assess, acquire, appraise) • Judging evidence, patient involvement (patient values and experiences, patient centred care) <p>Implementation Science</p> <ul style="list-style-type: none"> • Cultural change: Embed EBP into culture of organisation • Human factors, sociology, interprofessional and behaviour change skills, psychology • Ethics and values - organisational leadership in and outside the system • Interprofessional teamwork <p>Quality Improvement</p> <ul style="list-style-type: none"> • Quality improvement practices and audit 	<p>Strategies</p> <ul style="list-style-type: none"> • EBP at practical level (role models) • Acknowledge the journey from novice to clinical specialist (i.e. levels and progressing through levels) • PDSA cycle (plan, do, study, act) • Upskilling staff (not just students) • Education for educators • Mentoring and support • Problem based (team) learning • Interprofessional education • Dynamic, Interactive, reflexive accessible teaching and learning approaches 	<p>Assessment</p> <ul style="list-style-type: none"> • Need to evaluate EBP and its implementation • Peer/Interprofessional assessment • Audit and evaluation (external quality approval) • External framework assessment: do you have the competence?/do you use the competence? • How do you embed it? • Must they demonstrate use of competencies in a semi-regulated level/way? 	<p>Who</p> <ul style="list-style-type: none"> • Clinical and academics must work together incorporating patient expertise • Standard criteria across regulators, and accreditation bodies • Expertise from international leaders <p>How</p> <ul style="list-style-type: none"> • Applying EBP into policy guidelines for curriculum • Integrated healthcare curriculum • Incentive awards • Top down approach • Highlight the relevance of EBP • Awareness of the use of certain terminology may exclude some allied health professionals

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NCEC 2nd Clinical Effectiveness Education Forum Agenda (2017)



2nd Clinical Effectiveness Education Forum National Clinical Effectiveness Committee

Thursday November 9th 2017, Department of Health

14.00	Clinical Effectiveness education - what is it, should we do it, what's effective?	Prof Dermot Malone
14.20	Teaching of evidence-based practice in Ireland – report of a baseline study	Dr Elaine Lehane
14.40	Competencies: - EBP core concepts; an international Delphi study - What might a Clinical Effectiveness Competency Framework for Ireland look like?	Dr Eve O'Toole
15.00	Break	
15.15	Clinical Effectiveness Unit and the NCEC	Dr Niamh O'Rourke
15.30	What's next? Structured questions, plenary discussion and feedback: <ul style="list-style-type: none">• Competency framework and learning outcomes (the 'what')• Education; teaching and learning (the 'how')• Assessment• Next steps: how do we integrate?	Chair: Dr Patrick Glackin Dr Eve O'Toole Prof Dermot Malone Dr Tamasine Grimes Dr Niamh O'Rourke
16.20	Closing comments	Prof Dermot Malone

For additional information on the National Clinical Effectiveness Committee (NCEC), please visit our website at <http://health.gov.ie/national-patient-safety-office/ncec/>

Appendix 4. Empirical literature search strategy

EBSCOhost Search Terms and Combinations

EBSCOhost search included; Academic Search Complete, CINAHL (the Cumulative Index to Nursing and Allied Health Literature), Medline, PsycARTICLES, Psychology and Behavioral Science Collection, ERIC and UK/Eire Centre).

S1: Health and social care professional/Student terms

(in title/abstract or keyword)

undergraduate OR postgraduate OR graduate

OR

(Subject, MH)

Health personnel OR health Practitioners OR medical personnel

AND

S2: Clinical effectiveness terms

(in title/ abstract or keyword)

clinical effectiveness OR implementation science

OR

(Subject, MH)

Evidence based practice OR Evidence based medicine OR Quality of healthcare OR Quality control of medical care OR Quality of healthcare OR Translational Medical Research OR Translational research

AND

S3: Educational terms

(in title/ abstract or keyword)

competenc* OR curricul* OR framework

OR

(Subject, MH} Competency based education OR outcome based education OR Competency based teacher education

Appendix 5. Grey literature search strategy

Source and link	Search terms
Open Grey http://www.opengrey.eu/search in Subject: Education and Training in Subject: Medicine	Clinical effectiveness Evidence based practice Quality improvement Knowledge translation Implementation science
NHS Evidence/NICE https://www.evidence.nhs.uk/	evidence based practice and education (filter guidance and policy) quality improvement and education (filter guidance and policy) clinical effectiveness and education (filter guidance and policy)
Google https://www.google.com/	"competency framework" healthcare education
Practice Information and Co-ordinating Centre (EPPI-Centre) https://eppi.ioe.ac.uk/cms/	Competency framework
World Health Organisation website http://www.who.int/	Competency framework (filter: global/ publication) Clinical effectiveness
TUNING Project http://www.unideusto.org/tuningeu/ In headings/subject: teaching, learning and assessment	Evidence based practice
Nursing and Midwifery Council https://www.nmc.org.uk/	EBP OR Evidence based practice Quality Improvement OR QI Implementation
General Medical Council https://www.gmc-uk.org/	EBP OR Evidence based practice Quality Improvement OR QI Implementation
Health and Care Professions Council https://www.hcpc-uk.org/	EBP OR Evidence based practice Quality Improvement OR QI Implementation
NHS Education for Scotland https://www.nes.scot.nhs.uk/	EBP OR Evidence based practice Quality Improvement OR QI Implementation
The General Dental Council https://www.gdc-uk.org/	EBP OR Evidence based practice Quality Improvement OR QI Implementation
General Pharmaceutical Council https://www.pharmacyregulation.org/	EBP OR Evidence based practice Quality Improvement OR QI Implementation
Pharmaceutical Society https://www.thepsi.ie/gns/home.aspx	EBP OR Evidence based practice Quality Improvement OR QI Implementation

Appendix 6. Data extraction table- empirical literature

Name of Framework	Country	Academic level	Interprofessional Emphasis		Aspects of clinical effectiveness			Related competencies for clinical effectiveness	
			Y e s	N o	Specific discipline	EBP	QI		Implementatio n
1. Graduate level Quality and Safety Education for Nurses (Acton et al., 2017) ⁽⁴⁶⁾	USA	Graduate	x		Nursing		x	x	Communication, leadership, teamwork skills
2. Core Competencies in Evidence-Based Practice for Health Professionals: Consensus Statement Based on a Systematic Review and Delphi Survey (Albarqouni et al., 2018) ⁽⁶⁾	AUS	Undergraduate, postgraduate, and continuing professional development health programmes	X			x			
3. Levelling EBP Content for Undergraduate Nursing Students (Bloom et al., 2013) ⁽⁴⁹⁾	USA	Undergraduate		x	Nursing	x			
4. Principles for Training in Evidence-Based Psychology: Recommendations for the Graduate Curricula in Clinical Psychology (Beck et al., 2014) ⁽⁴⁸⁾	USA	Graduate	x		Psychology	x			Human factors, patient-centred
5. Developing an Integrated Evidence-Based Medicine Curriculum for Family Medicine Residency at the University of Alberta (Allan et al., 2008) ⁽⁴⁷⁾	CAN	Postgraduate		x	Medicine	x	x	x	
6. An Interprofessional Practice Capability Framework Focusing on Safe, High-Quality, Client-Centred Health Service (Brewer and Jones., 2013) ⁽⁵⁵⁾	AUS	Undergraduate, postgraduate, continuing professional development	x		22 disciplines		x		Communication, team function, conflict resolution, role clarification. Importance of leadership.

7.	Developing Competencies for Training Practitioners in Evidence-Based Cancer Control (Browson et al., 2009) ⁽⁵⁹⁾	USA	Continuing professional development		x		x		x	Describes 26 competencies organized in different levels including partnerships, collaboration and leadership
8.	Facilitated Learning Model to Teach Habits of Evidence- Based Reasoning Across an Integrated Master of Science in Occupational Therapy Curriculum (Cohn et al., 2014) ⁽⁵⁰⁾	USA	Undergraduate		x	OT	x		x	Patient centred
9.	Quality and safety education for advanced nursing practice (Cronenwett et al., 2009) ⁽⁵⁶⁾	USA	Graduate	x		Nursing		x	x	Teamwork, collaboration, communication, mutual respect, and shared decision-making to achieve quality and patient centred care.
10.	ACGME Core Competencies: Helpful Information for Psychologists (Cubic and Gatewood, 2008) ⁽⁶⁰⁾	USA	Residents	x		Psychology	x	x		Interpersonal and Communication Skills (ICS), human factors
11.	Evidence-based Teaching Tactics for Frontline Staff Using the Clinical Nurse Scholar Model (English, 2016) ⁽⁶⁵⁾	USA	Training for frontline staff	x		Nursing	x	x	x	Communication
12.	Integration of evidence-based medicine into the clinical years of a medical curriculum (Ferwana et al., 2012) ⁽⁵²⁾	Saudi	Undergraduate		x	Medicine	x			
13.	Assisting Students to Use EVIDENCE as a Part of Reflection on Practice (Ireland 2008) ⁽⁶³⁾	USA	Undergraduate and graduate		x	Nursing	x			Problem solving skills, self-reflection skills, human factors
14.	A real-world approach to Evidence-Based Medicine in general practice: a competency framework derived from a systematic review and Delphi process (Galbraith et al., 2017) ⁽⁵⁷⁾	UK	Continuing professional development		x	Medicine	x			Decision making skills, communication skills, knowledge of the patient, mindfulness, pragmatism, human factors
15.	Increasing the Translation of Evidence into Practice, Policy, and Public Health Improvements: A Framework for Training Health Professionals in Implementation and Dissemination Science (Gonzales et al., 2012) ⁽⁵⁸⁾	USA	Curriculum development	x					x	Collaboration, interdisciplinary research, behaviour change, community engagement

16. Implementing the COPA Model in Nursing Education and Practice Settings: Promoting Competence, Quality Care, and Patient Safety (Lenburg et al., 2013) ⁽⁶⁴⁾	USA	Undergraduate		X	nursing	x	x		Communication. Leadership, management
17. Incorporating Quality and Safety Education into a Nursing Administration Curriculum. (Miltner et al., 2012) ⁽⁵³⁾	USA	Graduate		x	Nursing		x		Leadership
18. Empowering Grassroots Evidence-Based Practice: A Curricular Model to Foster Undergraduate Student-Enabled Practice Change (Moch and Cronje, 2010) ⁽⁵⁴⁾	USA	Undergraduate		X	Nursing	x		x	Leadership, collaboration
19. Quality and safety in graduate nursing education: Cross-mapping QSEN graduate competencies with NONPF's NP core and practice doctorate competencies. (Pohl et al., 2009) ⁽⁶¹⁾	USA	Graduate	x		Nursing	x	x	x	Same of QSEN competencies: Teamwork and Collaboration.
20. Core competencies in the science and practice of knowledge translation: description of a Canadian strategic training initiative. (Strauss et al., 2011) ⁽⁶⁶⁾	CAN	Undergraduate and postgraduate						x	
21. Changing Conversations: Teaching Safety and Quality in Residency Training. (Voss et al., 2008) ⁽⁶²⁾	USA	Undergraduate	x		Medicine		x		Human factors

Appendix 7. Data extraction table- grey literature

Name of Framework	Country	Academic level	Interprofessional Emphasis			Aspects of clinical effectiveness			Competencies to enable clinical effectiveness
			Yes	No	Specific discipline	EBP	QI	Implementation	
1. Nursing and Midwifery Council ⁽⁷¹⁾	UK	Graduate		x	Nursing/ Midwifery	x	x	x	Leadership skills, effective communication, work in collaboration,
2.General Medical Council ⁽¹⁰⁾	UK	Graduate		x	Medicine	x	x		Communication skills, interpersonal skills, leadership skills, teamwork
3.Health and Care Professions Council ⁽⁷⁵⁾	UK	Graduate	x		OT, Physio, SALT, Radiographers, Dietitians		x	x	Communication, leadership, work in collaboration
4.The General Dental Council –Preparing for practice Dental team learning outcomes for registration (2015 revised edition) ⁽⁸⁶⁾	UK	Undergrad		x	Dentistry	x	x	x	Leadership, communication, teamwork, communication
5.Quality and Safety Graduate Competencies in Psychiatric Mental Health Nurse Practitioner Education (Weber et al., 2012) ⁽⁷³⁾	USA	Graduate	x		Nursing		x		
6.Tomorrows doctors (GMC 2009) ⁽³²⁾	UK	Graduate	x		Medicine	x	x	x	Communication, patient centred, teamwork, leadership
7.Innovations for Integrating Quality and Safety in Education and Practice: The QSEN Project (Cronenwett and Sherwood, 2011) ⁽⁵⁶⁾	USA	Undergrad	x			x	x	x	Patient centred, teamwork, collaboration
8.Developing educational competencies for dissemination and implementation research training programmes: an exploratory analysis using card sorts (Padek et al., 2015) ⁽⁷²⁾	USA	Postgrad				x		x	Patient centred
9. The Establishment of Evidence-Based Practice Competencies for Practicing Registered Nurses and Advanced Practice Nurses in Real-World Clinical Settings: Proficiencies to Improve Healthcare Quality, Reliability, Patient Outcomes, and Costs (Melnik et al., 2014) ⁽⁷⁴⁾	USA	Postgrad	x		Nursing	x			Patient-centred care Teamwork and collaboration

10. Generic professional capabilities framework (General Medical Council, 2017) ⁽⁷⁰⁾	UK	Postgrad		x	Medicine	x	x		Communication skills, interpersonal skills.
11. The CanMEDS 2005 Physician Competency Framework Better standards. Better physicians. Better care. (Frank, 2005) ⁽⁶⁹⁾	CAN	Graduate		x	Medicine	x	x	x	Communication, collaboration
12. Development of a Competency Framework for Quality Improvement in Family Medicine: A Qualitative Study (Czabanowska et al., 2012) ⁽⁷⁷⁾	NLD	Postgrad	x		Medicine		x		Leadership
13. Developing a competency framework to support training in evidence-based healthcare (Cowling Newman and Leigh 1999) ⁽⁶⁸⁾	UK	Health and social care professionals		x	x	x		x	Personal attributes, interpersonal skills and self-management skills (take responsibility for personal practice in the workplace)
14. Australian Safety and Quality Framework for Healthcare Putting the Framework into action: Getting started (Australian Commission on Safety and Quality in Healthcare, 2010) ⁽⁶⁷⁾	AUS	Policy makers	x		No discipline specified (for those with a policy role within the health system.)	x	x		

Appendix 8. Consultation Information leaflet

Title: Development of a Clinical Effectiveness Education Competency Framework for Health and social care professionals in Ireland.

Project Background: The Clinical Effectiveness Unit in the Department of Health's National Patient Safety Office commissioned this research to develop a competency framework for clinical effectiveness education, in order to build capacity among health and social care professionals in line with the National Clinical Effectiveness Committee's clinical effectiveness agenda. Clinical effectiveness is a fundamental approach to improving patient safety and quality in health service delivery (DoH 2016). The development of a competency framework for clinical effectiveness in Ireland is required to ensure that education standards and curricula for health and social care professionals are responsive to evidence-based practice, which is necessary for the provision of clinically effective and safe care.

Project Aim: To engage stakeholders in the development and validation of a proposed competency framework for clinical effectiveness health and social care professional education.

What will participation involve? If you agree to participate, you will be asked to partake in a focus group. The focus group discussion will last approximately 1-2 hours.

Why have you been asked to take part? You have been asked to participate because you are considered to have experience and expertise in this area.

Do you have to take part? No, participation is voluntary and even if you do initially agree to participate, you can withdraw from the study at any time. If you wish to withdraw any or all data after the focus group, this can be facilitated (within two weeks). You will be asked to sign and return a consent form and a copy of this and the information sheet will be available to you.

What about confidentiality? The information you give will be kept confidential. No personal details that might identify you will appear in the study report or associated publications unless explicitly stated otherwise.

What will happen to the information that you give? The data will be kept confidential, available only to the Principal Investigators, research team and tender contractor (National Patient Safety Office (NPSO)). All hard copy data will be stored in the PI's office in a locked cabinet which only the PI will have access to. Associated electronic data (audio/text files) will be stored on the PI/Research Team password protected computer which is managed by the School's IT manager and which has automatic capacity for back up of all records. On completion of the project, they will be retained for minimum of a further ten years and then destroyed.

What will happen to the results? The results will be presented in a report to the NPSO. The project team and NPSO personnel will see them. There is potential that the project findings will be presented at conferences and published in a research journal.

What are the possible risks of taking part? The risks (if any) are considered minimal. All information will be treated in the strictest confidence. Participation is voluntary. The research findings will be presented in academic presentations, publications but anonymity of the person will be upheld.

What if there is a problem? If you have any queries relating to the project after the focus group is completed I will be available to discuss same. **Who has reviewed this study?** The Social Research Ethics Committee, University College Cork.

Any further queries? Please contact Dr Elaine Lehane, Lead Researcher, on 021-4901476 or e.lehane@ucc.ie *Thank you for taking the time to read this information*

Appendix 9. Background Information Questionnaire

General background information

Please read each question and tick (✓) the box(s) for the answer(s) relevant to you.

1. Which of the following options best denotes the health and social care profession(s) you are representing? *(Please tick **all** that apply)*

- Clinical Psychology
- Dentistry
- Dietetics
- Medicine
- Midwifery
- Nursing
- Occupational Therapy
- Speech and Language Therapy
- Optometry
- Pharmacy
- Podiatry
- Physiotherapy
- Radiography
- Other health and social care profession (please specify) _____

2. Which of the following best represents your current employer?

- Health Service Executive
- Department of Health
- Third Level Education Institution (please specify) _____
- Professional Body/Organisation (please specify) (e.g. NMBI, PSI, Medical Council, CORU) _____
- Voluntary Sector (please specify) _____
- Private Sector (please specify) _____
- Independent Practitioner/ Consultant/Self-employed
- Other (please specify) _____

3. My role predominantly relates to *(please tick **all** that apply)*:

- Provision of education to students/trainees within a third level institution setting
- Provision of education from a professional body training perspective
- Provision of education within a clinical setting
- Oversight/regulation/standard setting for student/trainee education
- Other (please specify) _____

4. Gender:

- Male
- Female
- Prefer not to say
- Other (please specify) _____
-

5. How many years of experience do you have in your current professional role?

- Less than 2 years
- 3- 5 years
- 6 – 10 years
- Over 10 years

Thank You – Please return to the facilitator

Appendix 10. Consent form

Title: Development of a Clinical Effectiveness Education Competency Framework for Health and social care professionals in Ireland.

Principal Investigator: Dr Elaine Lehane **Email:** e.lehane@ucc.ie

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my interview with the Principal Investigator, Dr. Elaine Lehane to be audio- recorded.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that I can withdraw permission to use the data within two weeks of the focus group, in which case the material will be deleted.

I understand that all the information given will be highly confidential. My name or personal details will not be reported at any stage.

Confidentiality of records concerning my involvement in this project will be maintained. When required by law, the records of this research may be reviewed by government agencies and sponsors of the research, as all transcripts of tapes will be retained in the university on file for a period of seven to ten years.

I understand that results of the study will be published in academic journals and shared at relevant academic conferences.

I have had the opportunity to ask questions concerning any and all aspects of the project.

This is to confirm that I have been informed about this study and agree to participate

Signed: Date:

PRINT NAME:

Appendix 11. Topic guide

Questions/Discussion Prompts:

- a) Firstly, can we explore your understanding and perspective of “clinical effectiveness”?
- b) Selecting one of the domains of competence let us unpick it- what does it mean? *(Note to researcher: looking here at statement definitions and indicators within a competence framework).*
- c) Within each domain what are the optimal teaching and learning approaches that one might use? *(Note to researcher: will these differ depending on learner/context)?*
- d) Within each domain what are the optimal assessment methods to undertake *(Note to researcher: Should it be assessed? Who should perform the assessments? Will these differ depending on learner/context?)*.
- e) Is there anything else you would like to add before we finish?

Closing:

Thank you/refreshments/reminder re return of consent and questionnaire.

Appendix 12. Draft 1 Clinical Effectiveness Domain Competencies

Domain 1 – Evidence Based Practice (Adapted from DoH communication with Albarqouni et al 2018 pre-publication)

Competency Statement: Learners/Practitioners integrate best current evidence with clinical expertise and patient/family preferences and values for delivery of clinically effective healthcare (Adapted Cronenwett et al 2007)

Introductory

1. Understand evidence-based practice (EBP) defined as the integration of the best research evidence with our clinical expertise and our patient's unique values and circumstances.
2. Recognise the rationale and origin of EBP.
3. Practice the 5 steps of EBP: Ask, Acquire, Appraise and Interpret, Apply and Reflect.
4. Identify the preferred order of study designs for each type of clinical question, including the pros and cons of the major study designs.
5. Describe the distinction between using research to inform clinical decision-making and practice versus conducting research.

Ask

1. Identify the difference between the types of questions that cannot typically be answered by research (background questions) and those that can (foreground questions).
2. Identify different types of clinical questions, such as questions about treatment, diagnosis, prognosis and aetiology.
3. Convert clinical questions into structured, answerable clinical questions using PICO.

Acquire

1. Outline the different major categories of sources of research information, including traditional biomedical databases or databases resources which filter or pre-appraise research.
2. Design and conduct an appropriate search strategy for clinical questions.
3. Recognise the differences in broad topics covered by the major traditional databases.
4. Define strategies to obtain the full text of articles and other evidence resources.

Appraise and Interpret

1. Identify key competences relevant to the critical evaluation of the integrity, reliability, and applicability of health-related research.
2. Interpret different types of measures of association and effect, including key graphical presentations.
3. Critically appraise and interpret a systematic review.
4. Critically appraise and interpret a treatment study
5. Critically appraise and interpret a diagnostic study.
6. Distinguish evidence-based from opinion-based clinical practice guideline.
7. Identify the key features of and be able to interpret a prognostic study.
8. Explain the use of harm/aetiologies study for (rare) adverse effects of interventions
9. Explain the purpose and processes of a qualitative study.

Apply

1. Engage patients in the decision-making process, using shared decision making, including discussing the evidence and their preferences.
2. Outline different strategies to manage uncertainty in clinical decision-making in practice.
3. Explain the importance of baseline risk of individual patients when estimating individual expected benefit.
4. Interpret the grading of the certainty in evidence and the strength of recommendations in healthcare.

Reflect (inserted into Domain 2 and 3)

Domain 2: Quality Improvement Processes

Competency statement: Learners/Practitioners understand and apply quality improvement processes to achieve clinical effectiveness in the context of healthcare systems (adapted - Cronenwett et al., 2009).

Introductory

1. Understand the principles of quality improvement, including for example healthcare audit, clinical audit and adverse incident reporting (Tomorrow's Doctors 2009).
2. Describe models and methods for continuous quality improvement e.g. the Plan-Do-Check-Act cycle (Czabanowska et al., 2012).
3. Recognise the importance of cost appropriateness, balancing effectiveness, efficiency and access with optimal patient care (Frank et al 2005).
4. Understand the use and importance of performance measurement data in monitoring patient and health system outcomes (Czabanowska et al 2012).

Appraise

1. Appraise the care setting for gaps between local and best practice standards to identify areas for improvement and appropriate change (Crownenwett and Sherwood, 2011; GMC 2017).
2. Identify information about outcomes of care and quality improvement projects in the care setting (QSEN; Crownenwett and Sherwood, 2011; Australian Commission on Safety and Quality in Healthcare 2010).

Engage

1. Take part in regular reviews and audits of your work and that of your team (GMC, 2013).
2. Apply a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities (CanMeds, 2015).
3. Use measures to evaluate the effect of change and impact of quality improvement interventions (Cronenwett and Sherwood, 2011; GMC 2017).

Reflect

1. Recognise the role of personal clinical audit in facilitating evidence-based practice (Communication Albarqouni et al 2018)

Domain 3: Implementation of clinical effectiveness into practice

Competency statement: Learners/Practitioners integrate evidence-based practice and quality improvement processes into healthcare to achieve clinical effectiveness (adapted Fixsen et al, 2005).

Introductory

1. Understand models/theories of implementation science to promote translation of knowledge to practice (Gonzales et al. 2012).
2. Understand that translating best evidence into practice lies at the intersection of a variety of disciplines (e.g. epidemiology, health policy, and biostatistics) (Gonzales et al 2012).
3. Recognise the importance of using a behaviour change theory driven approach to implement evidence into practice, policy, and public health improvements (Gonzales et al 2012).
4. Recognise the importance of integrating a thorough understanding of local context and culture into design of the research question and intervention (Gonzales et al 2012).
5. Outline creative ways of transmitting evidence-based interventions to policy makers in order to gain interest, political support and funding (Brownson et al, 2009).

Appraise and Apply

1. Identify and develop sustainable partnerships with individuals, organizations and communities that are targeted for healthcare interventions aimed to achieve clinical effectiveness (Gonzales et al 2012).
2. Develop a cyclical approach for translating evidence into practice. This approach considers that real-world settings involve contextual variables and barriers which require strategies to overcome them (Gonzales et al., 2012).
3. Demonstrate a 'just-in-time', pragmatic approach, in which feasible strategies for clinical effectiveness are adopted (e.g. using trusted online sources of pre-appraised evidence, rather than conducting a systematic review amidst a busy working day) (Galbraith et al., 2017).

Reflect

1. *Recognise* potential individual, healthcare system and stakeholder organisation level barriers to knowledge translation and strategies to overcome them. (Communication Albarquoni et al 2017)

Domain 4: Professional Practice in the context of Clinical Effectiveness

Competency statement: Learners/Practitioners understand their role and responsibilities, as well as the roles and contributions of other professionals, and use this knowledge appropriately to establish and achieve a culture of clinical effectiveness.

Collaborative practice

1. Recognise your personal responsibility to promote clinical effectiveness, by having an awareness of personal perspectives and biases that can influence one's assessment and decisions (Czabanowska et al., 2012; Cubic and Gatewood, 2008; Ireland, 2008; Galbraith et al., 2017; NMC standards, 2013; GDC 2015; HCPC 2013).
2. Demonstrate collaboration with patients, colleagues and stakeholder organisations to address patients' needs, ensuring implementation of best evidence into practice and quality improvement (GMC 2013; Frank et al 2015; Czabanowska et al., 2012).
3. Contribute to the development of students, peers, colleagues and others through consultation, education, leadership and mentorship to embed a culture of clinical effectiveness (CanMeds 2015).
5. Exhibit interprofessional team behaviours by fostering open communication, mutual respect, and shared decision-making to improve patient outcomes and achieve clinical effectiveness (CanMeds, 2005QSEN, GDC 2015; Czabanowska et al., 2012).

Communication

1. Demonstrate oral and written skills for explaining complex information to a diverse range of individuals, groups and communities to promote clinical effectiveness (CanMeds, 2015, HCPC 2013; PSNI 2016; GMC 2013; Czabanowska et al., 2012).
2. Communicate effectively using a wide range of strategies and interventions to overcome potential communication barriers to clinical effectiveness, including the effective use of communication technologies (NMC 2010; Weber et al. 2012; QSEN 2011).
3. Cultivate a culture and policy of openness in disclosing the potential and actual benefits and harms associated with interventions (Project Team)

Leadership

1. Recognise the importance of strong leadership and commitment from health and social care professionals regarding the need and importance of clinical effectiveness (Brownson et al., 2009)
2. Recognise the importance of effective leadership from health professionals when making decisions in the midst of ever changing environments (Brownson et al., 2009).
3. Demonstrate leadership by example through acting as a change agent/champion through delivering and sustaining clinical effectiveness processes (NMC, 2010; Acton et al 2017).

Appendix 13. Stakeholders contacted for consultation groups

Department of Health/Policy Representatives

Sector Representing

National Clinical Effectiveness Committee (NCEC)

- NCEC Chair (Representative)
- Health Information and Quality Authority
- Mental Health Commission
- Health and Social Care Regulatory Forum
- Health Products Regulatory Authority
- State Claims Agency
- Forum of Postgraduate Training Bodies
- Nursing and Midwifery Education Bodies
- Forum of Hospital Group CEOs
- HSE Clinical Programmes
- HSE Quality Improvement Division
- HSE Office of Nursing and Midwifery Services
- National Office for Clinical Audit
- Private Hospitals Association
- Health Research Board
- Health Insurance Council
- Department of Health x 2
- Patient Representatives x 2

NCEC subgroups x 3

- Subgroup on Audit x 9 members
- Subgroup on Education and Training x 6 members
- Subgroup on Guideline Methodology x 9 members

Department of Health representatives

- National Patient Safety Office (NPSO)
- Clinical Effectiveness Unit (CEU)
- Office of the Chief Dental Officer
- Office of the Chief Medical Officer
- Office of the Chief Nursing Officer
- Organisation Development

Higher Education Institute and Patient Representatives

Sector Representing	Affiliation
Nursing and Midwifery	RCSI
Nursing and Midwifery x 2	DCU
Nursing and Midwifery x 3	UCD
Midwifery	UCC
Physiotherapy	UL
Speech and Language x 2	TCD
Speech and Language	UCC
Speech and Language	NUIG
Speech and Language	UL
Pharmacy	RCSI
Pharmacy	TCD
Pharmacy	UCC
BSc Diagnostic Radiography	UCD
Podiatry	NUIG
Dietetics	UCD
Clinical Psychology	TCD
Clinical Psychology	UL
Psychology	Mater
Dentistry	TCD
Medicine	RCSI /Bon Secours
Medicine	UL
Occupational Therapy	UL
Optometry	DIT
Intellectual disabilities/Autism spectrum disorders services	Cope Foundation
Intellectual disabilities/Autism spectrum disorders services	Brothers of Charity (Southern Services)
Head injury services and support x 2	Headway Ireland (Cork)
Disability services	Enable Ireland (HSE)

Professional Training and Regulatory Body Representatives

Sector Representing	Affiliation/Membership
Medicine x 4	IMC
Medicine	RCPI
Medicine	National Doctors in Training Programme
Medicine	Faculty of Radiologists - RCSI
Medicine	College of Psychiatrists in Ireland
Medicine	Irish College of Ophthalmologists
Health Professions Education Centre	RCSI
Human Factors	RCSI
Nursing and Midwifery	Centre of Nursing and Midwifery Education
Nursing and Midwifery	NMBI
Allied Health Professions	CORU
Occupational Therapy	AOTI
Pharmacy	IIOP
Health and Social Care Professions	CORU
CORU/Speech and Language	CORU/UCC
CORU/Speech and Language Therapists Registration Board	CORU/TCD
Speech and Language x 3	IASLT/HSE
Pharmacy x 2	PSI
Pharmacy x 2	IIOP
Education Standards Officer	PSI
Pharmacy - Professional Development and Learning Unit	PSI
Dentistry x 2	Dental Council
Chair (HEA)	HEA
Radiography	Irish Institute of Radiography and Radiation Therapy
Physiotherapy	ISCP
Quality and Qualifications Ireland	QQI

Related Stakeholder Representatives

Sector Representing	Affiliation
Health and Social Care Professions x 3	HSE
Quality Accreditation	FQAS
Research x 2	HRB-CICER/HIQA
Representative - Centre for Effective Services (CES)	Not for profit, intermediary organisation

Appendix 14. Tracking of Recommendations of focus groups

(Please contact lead researcher Dr Elaine Lehane e.lehane@ucc.ie) to access further details)