Centre for Interprofessional Education

Division of Health Sciences

A Curriculum and Quality Framework for Interprofessional Education at Otago: Strategic Plan 2020-2024

Full Report

In conjunction with: 'A Curriculum and Quality Framework for Interprofessional Education at Otago: Strategic Plan 2020-2024: Statement of Policy Recommendations'

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On behalf of Divisional Interprofessional Education Governance Group (DIPEGG) and IPE Centre

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Table of Contents

Consultation process 8

Acknowledgements 9

Acronyms 11

Executive summary 13

Overall conclusions 13

Report layout 15

1 Chapter 1: Introduction and background 17

1.1 Purposes of this report 17

1.2 Why interprofessional education and collaborative health care? 17

1.3 Linking education more closely to practice 19

1.4 Interprofessional education as educational theory and philosophy 20

1.5 Research into interprofessional collaborative practice (IPCP) and IPE 20

1.6 Progress to date at Otago 21

1.6.1 Establishment of the IPE Centre 21

1.6.2 Conceptual model development 22

1.6.3 Current graduate profiles and accreditation standards 24

1.6.4 Why a quality framework? 25

2 Chapter 2: Definitions for a quality framework 27

2.1 A common language for interprofessional education and practice 27

2.2 Health and social care in interprofessional education and practice 27

2.3 Interprofessional practice 28

2.4 Interprofessional education principles 28

2.5 Interprofessional educational organisation 29

2.6 Educational equivalence 34

2.7 Conclusion for a common IPE language at Otago 35

3 Chapter 3: IPE governance and operations at Otago 36

3.1 IPE governance 36
3.2 IPE Centre operations 37
3.3 Models for IPE development 38
3.4 IPE Centre achievements and work-in-progress 40
4 Chapter 4: Development of an IPE curriculum 41
4.1 Rationale for a longitudinal IPE curriculum for Otago 41
4.2 Current range of IPE learning activities at Otago 42
4.3 Staff development and recognition to support the range of IPE activities at Otago 45
4.4 The importance of cross-institutional partnerships 46
4.5 Postgraduate learning: informing pre-registration IPE 46
4.6 Simulation-based education for IPE 47
4.7 Rural settings for IPE 48
4.8 Key outcomes as a result of IPE 49
4.9 An integrated, robust programme of learning 50
4.9.1 IPE core competency domains 50
4.9.2 Standard-setting and educational equivalence 51
4.9.2.1 Characteristics of some IPE curricula 51
4.10 Conclusions for an IPE curriculum at Otago 52
5 Chapter 5: Assessment of student learning 56
5.1 A rationale for assessment in IPE 56
5.2 Why assess 56
5.3 What to assess 57
5.4 How to assess 60
5.4.1 Assessment of students at clinical workplace placements 63
5.4.2 Assessment over the course of a programme (programmatic assessment of IP competencies) 63
5.4.3 Approaches to IPE group assessment 64

5.4.4 Opportunities for remediation....65
5.5 Conclusions for IPE assessment at Otago....67
6 Chapter 6: Organisation, standard-setting and accreditation of learning activities and IPE curricula....68
6.1 Approaches to introducing IPE curricula and activities....68
6.2 Coordinating, enhancing and monitoring learning activities/programme components....69
6.3 Integrating IPE curricula....70
6.4 A 'credit equivalence' system for Otago....70
6.4.1 Learning activities....70
6.4.2 Students....71
6.4.3 Points values....71
6.4.3.1 Points value: Complexity of IPE learning....71
6.4.3.2 Points value: IPE student workload....72
6.4.3.3 Points value: Expected IP competency domains (learning outcomes)....72
6.4.4 Credits and credit value....72
6.4.4.1 Conversion of points to credits....72
6.4.5 Requirements to complete the IPE curriculum....73
6.4.6 Institutional register of IPE activities....76
6.5 Conclusions for a system of credit equivalence in IPE at Otago....76
6.6 Conclusions for integrating IPE curricula at Otago....78
7 Chapter 7: Evaluation of IPE learning activities, curricula and associated programmes....81
7.1 Why IPE evaluation matters....81
7.2 Outcomes-based evaluation....81
7.3 Other theoretical frameworks....84
7.4 Evaluating and monitoring quality in IPE at Otago....85
7.5 Conclusions for evaluating IPE at Otago....85
8 Concluding thoughts: towards a quality framework for IPE at Otago....89
References....91

9 Additional material and appendices 100

9.1 Key points from the IPE Strategic Plan 2016-19 100

9.2 Otago graduate profiles and IPE competencies 101

9.3 IPE Centre work-in-progress 101

9.4 IPE learning activities at Otago 103

9.5 Characteristics of some IPE curricula at other institutions 106

9.6 Individual Teamwork Observation and Feedback Tool (iTOFT) 108

9.7 Interprofessional Education Collaborative (IPEC) Competency Self-Assessment Questionnaire 109

9.8 Student Feedback Rubric, Otago IPE Smoking Cessation Module [IPE Non Communicable Diseases Module] 2018 110

9.9 Systems for registering IPE activities within institutions 110

9.10 Systems for accrediting IPE learning within institutions 112

9.11 Exemplar application forms to register IP learning 113

9.11.1 Texas Tech University 114

9.11.2 University of British Columbia 114

9.11.3 University of Toronto 114

9.12 Requirements to complete the IPE curriculum: expanded tables 114

9.13 Self-report tools to measure IP learning outcomes 119

Table of Conclusions

Conclusion 1: A common IPE language 35
Conclusion 2: A formal, agreed quality framework 52
Conclusion 3: Defined IPE curriculum 52
Conclusion 4: Adaptive IPE curriculum 52
Conclusion 5: IPE staff development as quality criterion 52
Conclusion 6: IPE staff development as programmatic approach 52
Conclusion 7: Responsive IPE curriculum 53
Conclusion 8: Components of IPE curriculum 53
Conclusion 9: IPE core competency domains 53
Conclusion 10: Timing and sequence of IPE learning activities 54
Conclusion 11: Characteristics of interprofessional learning activities 54
Conclusion 12: Criteria for interprofessional learning outcomes: clinical placements 55
Conclusion 13: Assessment of IPE competencies 67

Conclusion 14: IPE assessment tools 67
Conclusion 15: IPE attainment 76
Conclusion 16: IPE credit matrix at Otago 76
Conclusion 17: Prerequisites for IPE credits 76
Conclusion 18: Points for complexity of IPE learning 77
Conclusion 19: Points for IPE student workload 77
Conclusion 20: Points for IP competency domains (learning outcomes) 77
Conclusion 21: Conversion of points to credits 78
Conclusion 22: Requirements to complete the IPE curriculum 78
Conclusion 23: Nature of integrated IPE curriculum 78
Conclusion 24: Status of integrated IPE curriculum 79
Conclusion 25: Integrated guidelines and criteria for IP learning, assessment and evaluation 79
Conclusion 26: Integrated progressive IP learning 79
Conclusion 27: Institutional register of IPE learning activities 79
Conclusion 28: Evaluation of IPE learning activities 85
Conclusion 29: Evaluation of extended complex immersion clinical placement programmes 86
Conclusion 30: Programmatic evaluation, when IPE curriculum in place 88

Table of Figures

Figure 1: The IPE conceptual model at Otago, 2018-2019 23
Figure 2: IPE divisional and campus-level governance, 2018-2019 36
Figure 3: IPE Centre overview and reporting, 2018-2019 37
Figure 4: IPE linkages 38
Figure 5: The IPE process model at Otago, 2018-2019 39

Table of Tables

Table 1: IPE core competency domains, with examples of possible specific intended learning outcomes (ILOs) 59
Table 2: Example of calculation of IPE credits for a specific learning activity by accumulation of points 73
Table 3: Example of IPE credits applied to current IPE learning activities 74
Table 4: Selected examples of IPE credit attainment by student/campus/learning activity, over the course of their degree 74
Table 5: Classification of interprofessional outcomes (Barr et al., 2005) 82
Table 6: IPE Centre achievements and challenges: snapshot at December 2018 101
Table 7: Summary of IPE learning activities at Otago up to 31 December 2018 (grouped north to south, by level) 103
Table 8: IPE curricula stages for pre-registration students (to be completed by registration) – some key examples of stages in longitudinal curricula, and/or curricular frameworks 106
Table 9: Examples of criteria/standards that learning activities must meet to be approved or accredited by the institution to become part of a IPE 'longitudinal curriculum' 110
Table 10: Examples of systems for accrediting learning activities within a well-defined curriculum framework 112
Table 11: Example of IPE credits applied to current IPE learning activities (expanded) 115

Table 12: Examples of IPE credit attainment by student/campus/learning activity, over the course of their degree (expanded) 116
Table 13 Qualitative characteristics of instruments to measure outcomes of interprofessional education (Oates & Davidson, 2015) 119

Consultation process

This final Full Report, and the accompanying Final Statement of Policy Recommendations, are the result of extensive research and consultation as follows:

- Draft report researched, written and formulated 2018, considered by the Divisional Interprofessional Education Governance Group (DIPEGG) October 2018
- Circulation and critical comment received from degree programme leaders across the health professional pre-registration programmes, postgraduate colleagues and national and international experts, 2018
- Associated policy recommendations developed alongside full report, re-considered by the Divisional Interprofessional Education Governance Group March 2019
- Draft full report and policy recommendations presented and considered by the Division of Health Sciences Executive March 2019. Accepted in principle, with proviso that all relevant curriculum committees (or equivalent) be consulted as to the feasibility of progressive implementation
- Consultation process completed April – October 2019; all feedback and critique considered, incorporated
- Final Full Report and final Statement of Policy recommendations, 01 November 2019.

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Acronyms

Note: Chapter 2 discusses definitions and provides a detailed glossary of IPE-related terms; also including definitions related to health and social care.

AITCS	Assessment of Interprofessional Team Collaboration Scale : see discussion in Section 5.4
ASL	Attitudes to Shared Learning (evaluation instrument) : see discussion in Section 7.2
CBOATS	Collaborative Behaviors Observational Assessment Tools (assessment tool) : see discussion in Section 5.4
CUAP	Committee on University Academic Programmes (of Universities New Zealand)
DHB	District Health Board (in New Zealand)
DIPEGG	Divisional Interprofessional Education Governance Group : in the Division of Health Sciences, University of Otago
DOPS	Direct Observation of Procedural Skills (assessment tool) : see discussion in 5.4.1
EPAs	Entrustable professional activities : see definition in Section 5.2
GRPQ	Generic Role Perception Questionnaire (evaluation instrument) : see discussion in Section 7.2
HEDC	Higher Education Development Centre, University of Otago
HPCAA	Health Practitioners Competence Assurance Act (2003) (in New Zealand)
HWNZ	Health Workforce New Zealand
ICAR	Interprofessional Collaborator Assessment Rubric (assessment and/or evaluation instrument) : see discussion in Section 5.4 (assessment) and Section 7.2 (evaluation)
IEPS	Interdisciplinary Education Perception Scale (evaluation instrument) : see discussion in Section 7.2
ILOs	Intended learning outcomes : see discussion in Section 4.9.1 and Section 5.3
IP	Interprofessional : see discussion of definitions in Chapter 2
IPC	Interprofessional collaboration see discussion of definitions in Chapter 2
IPCP	Interprofessional collaborative practice see discussion of definitions in Chapter 2
IPE	Interprofessional education see discussion of definitions in Chapter 2
IPEC	Interprofessional Education Collaborative (IPEC) IPEC Competency Self-Assessment (assessment tool) : see discussion in Section 5.4.2 and Section 9.7
IPE Centre	Division of Health Sciences Centre for Interprofessional Education, University of Otago
IPL	Interprofessional learning

	see discussion of definitions in Chapter 2
ISVS	Interprofessional Socialisation and Valuing Scale (evaluation instrument) : see discussion in Section 7.2
INTERact	Clinical IPE programme at the University of Otago : e.g. Hawke's Bay, Nelson, Christchurch, Timaru
iTOFT	Individual Teamwork Observation and Feedback Tool (assessment tool) : see discussion in Section 5.4
KidSIM	KidSIM Attitudes Towards Teamwork in Training Undergoing Designed Educational Simulation (ATTITIDES) (evaluation instrument) : see discussion in Section 7.2
LOs	Learning outcomes : see discussion in Section 4.9.1 and Section 5.3
MBChB	Bachelor of Medicine and Bachelor of Surgery
Mini-CEX	Mini Clinical Evaluation Exercise (assessment tool) : see discussion in Section 5.4.1
MOA	Memorandum of Agreement
NSRH	National School of Rural Health (proposed) : see Section 4.7
NZQF	New Zealand Qualifications Framework
OMS	Otago Medical School
RHIP	Rural health immersion programme: : complex immersion programme of the University of Auckland and partner institutions, funded by Health Workforce New Zealand, based in Whakatane
RHIIP	Rural Health Interprofessional Immersion Programmes: : at University of Auckland (known as RHIP) and at University of Otago (known as TIPE), see Section 4.7
RIPLS	Readiness for Interprofessional Learning Scale (evaluation instrument) : see discussion in Section 7.2
SBE	Simulation-based education
SPICE-R2	Students Perceptions of Interprofessional Clinical Education (Revision 2) see discussion in Section 7.2
SSR	Support Services Review University of Otago process of review and change management for 'implementing administrative and operational processes to ensure excellence in research and teaching at Otago'
TIPE	Tairāwhiti Interprofessional Education Programme : complex immersion programme of the University of Otago and partner institutions, funded by Health Workforce New Zealand, based in Tairāwhiti and Wairoa
T-OSCE / ITOSCE	Team Objective Structured Clinical Examinations / Interprofessional Teamwork Objective Structured Clinical Examinations (assessment tools) : see discussion in Section 5.4
TSS	Team Skills Scale (evaluation instrument) : see discussion in Section 7.2
UWEIPQ	University of the West of England Interprofessional Questionnaire (evaluation instrument) : see discussion in Section 7.2

Executive summary

To guide the next phase of development for interprofessional education (IPE) at Otago – specifically, agreeing a plan and approach to quality in IPE over the next five to 10 years - this report has formulated overall (general) and detailed conclusions. These serve as a basis for consulting with stakeholders, and ultimately to inform policy recommendations and decisions for an IPE quality framework at Otago. Specific policy recommendations are given in a shorter, companion document.

Thus, the purposes of this report are to:

- Investigate the literature and international experience in relation to assuring quality in IPE
- Describe Otago's current progress towards the development of an IPE quality framework for pre-registration health sciences degree programmes
- Draw conclusions for how to build on work to date at Otago, and provide a blueprint for comprehensive quality in IPE over the next five to 10 years
- Inform policy recommendations for an IPE quality framework at Otago*.

(*in a companion policy report)

Overall conclusions

1. In **summary**:
    a. IPE is increasingly being integrated into health professional curricula around the world
    b. Otago is making steady progress in implementing IPE in health professional degree programme curricula
    c. Assuring quality in IPE learning and teaching is essential, and needs to be done without incurring unintended consequences
    d. Timing is apt for giving concerted attention to a quality framework for IPE in our institution.
2. **A formal, agreed quality framework**: A framework that clearly articulates an agreed, common IPE curriculum across degree programmes is critical, given Otago's number of health professional degree programmes and the consequent complex matrix of professional and student expectations, regulatory requirements, societal contexts, community expectations, varying lengths of programmes, and the historic programmatic structures,
3. **Language**: A common language for interprofessional education and practice is imperative if teachers, practitioners and learners are to fully understand each other at and beyond our institution. These terms relate to: interprofessional practice, interprofessional education, IPE

learning objectives, IPE competencies/capabilities and outcomes, progression/complexity of IPE learning, and systems of educational equivalence for interprofessional learning.

4. **Curriculum design**: The design and implementation of a longitudinal IPE curriculum at Otago needs to take into account the range of partnerships and teaching/learning intersects that support collaborative health and social care professional education, as well as critical outcome themes running through all IPE teaching and learning (e.g. cultural competence, social accountability, collaborative practice, and quality and safety).

5. **Timing**: A defined, adaptive, longitudinal IPE curriculum, delivering a defined set of overarching IP competency domains, should be introduced early in health professional degree programmes, continue through to senior years, and be mandatory for all participating students.

6. **IPE core competency domains**: Six IP competency domains are clearly defined as: Interprofessional communication; Role clarification and appreciation; Reflective practice, incorporating interprofessional principles, values, ethics; Teamwork and team functioning, including conflict negotiation and resolution; Collaborative leadership and followership; Interprofessional coordination and shared decision-making. Within each domain, a set of IP competencies should be described as IP learning outcomes.

7. **IPE learning activities**: IPE learning activities, which can be wide-ranging in their scope and method, should nevertheless all incorporate key characteristics (e.g. interprofessional mix of staff and students, clearly stated interprofessional outcomes, summative assessment for the demonstration of IPE competencies), with particular criteria for clinical interprofessional learning.

8. **IPE facilitation and teaching expertise**: A programmatic approach is needed to develop and deploy sufficient training for IPE facilitation, teaching expertise and further development of teaching resources for expansion and consolidation of an IPE curriculum. Clinicians who teach students in their clinical workplaces need to be included and encouraged to engage in IP teacher training opportunities.

9. **IPE assessment**: Agreed interprofessional (IP) competency domains are well-developed internationally and can provide a clear guide as to what to assess. While it is not necessary that all IP competency domains be assessed in every learning activity, profession-specific, topic-specific and IP competencies are best assessed together if possible. The use of several different methods of assessment - well-aligned to discrete learning activities at different stages of learning, including at IP clinical placements - is appropriate.

10. **IPE programmatic assessment**: Methods are needed for programmatic assessment of progressive acquisition of IP competencies by individual students progressing through IPE curricula - but are still under-developed. For Otago, ensuring selected competency domains are assessed at learning-activity level, and are all included somewhere over the course of an IPE curriculum, is a realistic, intermediate goal.

11. **IPE attainment**: Attaining a formal IPE curriculum over the course of a health professional degree needs to be both feasible and transparent. At Otago - especially given the highly

distributed nature of our teaching and learning, and clinical experience - all IPE learning activities need to be able to be compared to each other, and mapped to a system of Division-wide credit.

12. **IPE credit equivalence**: A set of ideas and examples is developed for a system of 'credit equivalence', built on points and credits accumulated by students through a matrix of elements and requirements, over the course of a health professional degree programme; and based on: IPE workload hours, progression/complexity of IPE learning, IPE learning objectives, and IPE learning outcomes.

13. **IPE learning activities register**: Guidelines, prerequisites and minimum criteria for IPE activities in an integrated IPE curriculum are proposed, for recording in an institutional register of IPE activities. The register will support a coordinated IPE system and equivalence process, as well as quality assurance and continuous improvement at activity and programmatic levels.

14. **Evaluation of IPE learning activities**: For IPE learning activities, choice of one available and appropriate outcomes-based instrument, combined from time to time with focus group and/or interview data, is likely to be realistic for evaluation, especially if used repeatedly over time. For complex immersion clinical placement programmes (such as the Tairāwhiti IPE programme), input from communities, clinical workplace providers and local stakeholder organisations, are key evaluation components, and a wider range of evaluation is needed.

15. **Evaluation of IPE curriculum**: At the programmatic/IPE curriculum level, the ongoing collation of evaluation information from discrete learning activities will be increasingly important within an overarching evaluation framework, including dialogue and agreement with other programmatic evaluations.

Report layout

Chapter 1 makes the case for why IPE is now widely promulgated among the health professions as an important way to create collaborative-practice-ready health practitioners. It outlines the development of a Divisional IPE Governance Group, established in 2014; the Divisional Executive's ratification of a strategic plan for IPE in October 2015; and the establishment of the Division of Health Sciences Centre for Interprofessional Education (IPE Centre) in November 2016. It describes the development of an Otago conceptual model and processes to sustain and develop coordinated IPE learning activities. An increasing number of these are now being delivered across the health professional degree programme curricula (all campuses and a number of regional sites).

Chapter 2 outlines the need for a common language of interprofessional education and practice, if teachers, practitioners and learners are to fully understand each other. The terms set out relate to: interprofessional practice, interprofessional education, IPE learning objectives, IPE competencies/capabilities and outcomes, progression/complexity of IPE learning, and systems of educational equivalence for interprofessional learning.

Chapter 3 provides an overview of IPE governance and operations at Otago, as a precursor to considering development of an IPE curriculum in our institution.

Chapter 4 argues specifically for the development of a longitudinal IPE curriculum at Otago: one that is theory-driven, closely linked to practice, and takes account of the multiple contexts in which both education and health practice are located.

Chapter 5 discusses the importance of, and methods for, assessment of defined interprofessional competencies, as linked to intended IPE learning outcomes and important contextual aspects (as captured, for example, in Otago's IPE conceptual model).

Chapter 6 considers IPE curriculum development, organisation and standard-setting. It proposes a register of IPE learning activities and a Division-wide system of credit equivalence. In some institutions, IPE has been introduced through wholesale curriculum redesign and restructuring of health sciences faculties or their equivalent. In others – like Otago – discrete IPE learning activities are introduced, and then require 'retrofitting' into a programmatic IPE curriculum.

Chapter 7 explores and makes the case for evaluation of IPE learning activities, IPE curricula and associated programmes, and the development of an appropriate evaluation framework.

Chapter 8 provides concluding remarks on the findings of this report, namely: IPE is increasingly being integrated into health professional curricula around the world; Otago is making steady progress in implementing IPE in health professional degree programme curricula; assuring quality in IPE learning and teaching is essential; and the timing is apt for giving concerted attention to a quality framework for IPE in our institution.

Appendices in section 9 provide supplementary material, including in the form of additional tables and hyperlinks to attachments, for those needing more detail about particular areas. Specific instructions for access to attachments are provided wherever relevant.

1 Chapter 1: Introduction and background

1.1 Purposes of this report

The case for interprofessional education (IPE) to form a core part of pre-registration health professional degree programmes is strong and increasing. At Otago since 2015, we have ratified a vision and strategy for IPE, and selected our current focus (pre-registration programmes); defined our drivers for change; established cross-disciplinary governance and a resourced operational structure; and agreed a conceptual model. A range of discrete learning activities has been developed, refined and evaluated, with each activity meeting recognised standards for IPE. Otago is now well-placed for next steps to meet new registration, and accreditation, expectations - in Australasia and internationally - for pre-registration students.

Crucially, these next steps entail consideration and development of IPE as a programmatic whole at Otago, delivered within an agreed quality framework incorporating:

- An agreed, common curriculum across health professional degree programmes
- Guidelines for IPE student assessment approaches and tools, as related to IPE learning outcome domains and competencies
- A system for integrating IPE activities into a longitudinal, programmatic curriculum in the health sciences (ultimately extending to post-graduate/post-registration levels)
- Guidelines for evaluation of IPE at learning-activity and programmatic levels.

The purposes of this report are to:

- Investigate the literature and international experience in relation to assuring quality in IPE
- Describe Otago's current progress towards the development of an IPE quality framework for pre-registration health sciences degree programmes
- Draw conclusions for how to build on work to date at Otago, and provide a blueprint for quality in IPE over the next five to 10 years
- Inform and to be read with the companion **Statement of Policy recommendations** for an IPE quality framework at Otago.

1.2 Why interprofessional education and collaborative health care?

Interprofessional education (IPE) has been widely promulgated among the health professions as an important way to create *collaborative practice-ready* health practitioners (World Health Organization, 2010a). *Interprofessional education* occurs 'when learners of two or more health or social care professions engage in [intentionally] learning with, from, and about each other to improve collaboration and the quality of care and services' (Centre for Collaborative Health Professional Education (CAIPE), 2017). IPE is not a new concept; as long ago as the 1960s, calls were

being made for health professionals to learn together more effectively in order to provide better care for patients/clients (World Health Organization, 1988).

In the last 20 years, the need for collaboration in health care has become ever more evident – no one health professional can now provide all the skills and services that constitute modern well-coordinated, high-quality, best patient/client care – especially for those with complex and/or chronic conditions (Frenk et al., 2010). Despite good intentions, health systems have become increasingly fragmented and inefficient; the WHO describes education for, and implementation of, collaboration as one of the most important ways to move health systems from fragmentation to positions of strength (World Health Organization, 2010a).

Interprofessional collaboration (IPC) is 'an active and ongoing partnership often between people from diverse backgrounds with distinctive professional cultures …who work together to solve problems or provide services' (Barr, Koppel, Reeves, Hammick, & Freeth, 2005) p.5 A number of IPC competencies have been well described and include: understanding of effective interprofessional principles and values; communication; patient-/client-/family-/community-centred care, also referred to as person-centred care; role clarification; team functioning; collaborative leadership; and interprofessional conflict resolution (CIHC Canadian Interprofessional Health Collaborative, 2010; Curran et al., 2009; IPEC Interprofessional Education Collaborative, 2016).

Although this type of cooperation is often assumed to occur in health care, and tacitly assumed to be essential practice, many gaps and duplications occur in reality, both within and between health and social services (Nelson, Tassone, & Hodges, 2014). Poor collaboration and serious communication errors continue to result all too often in compromised patient/client safety and low quality of care (Leonard, Graham, & Bonacum, 2004; Paterson, 2012).

In New Zealand, one of the most common reasons cited for a breakdown of care, is poor communication between health and/or social care providers (Paterson, 2010). The Health Quality and Safety Commission has identified good teamwork and collaborative practice as key to reducing error and harm in this country's health system. Interdisciplinary collaboration reduces clinical error in complex situations, as well-functioning teams make fewer mistakes than individual practitioners on their own (Health Quality and Safety Commission, 2016).

Whether considering themselves patients or consumers, clients or health and social service users, people want, and deserve, more say in their own care (for example, as members of patient/client care teams) (Towle et al., 2016). Family or whānau-centred health and social care may be more appropriate than individual decision-making. Exploring the role of patients/clients/whānau as members of their own care teams is another as yet under-developed interprofessional task.

There is also increased societal expectation of informed debate around health education and health resource allocation. Entitlement (e.g. to scarce resources) on the one hand, and freedom of choice (e.g. refusal to participate in public health measures for the common good) on the other, sit uncomfortably beside each other at times. Interprofessional education, with person-centred care at its core, can be a powerful vehicle for health and social care professional students to learn to listen and engage, to negotiate dissonance and to help achieve shared goals.

On the other hand, when the key elements of collaboration are successfully implemented in a practice setting, this can appropriately be called *interprofessional collaborative practice (IPCP)* (Morgan, Pullon, & McKinlay, 2015). When IPCP is working well in a particular setting, it has been shown to achieve higher patient/client satisfaction (Proudfoot et al., 2007), improve patient/client safety (Timmel et al., 2010; Velji et al., 2008), and improve health outcomes (Strasser et al., 2008). Increased job satisfaction (Proudfoot et al., 2007), and increased retention/recruitment of staff (Borrill et al., 2000) also result.

1.3 Linking education more closely to practice

Three ground-breaking, wide-ranging international review reports on health systems and health professional education were published in 2010, with clear calls for educational change - including IPE. The WHO Framework for Health, a Lancet Commission report, and a Global Consensus on Social accountability for medical schools, all described major mismatches between current health professional education and current health practice needs (Freeth, Hammick, Reeves, Koppel, & Barr, 2005; World Health Organization, 2010a, 2010b). The US Institute of Medicine's 2015 report reiterated similar recommendations (Institute of Medicine, 2015). Each called for urgent reorientation of health professional education, not only to better align with current and future health societal needs, but to go further and **lead the way** towards better, more collaborative and sustainable health systems. As Frenk and colleagues state,

> *a shared vision and a common strategy for postsecondary education in medicine, nursing, and public health that reaches beyond the confines of national borders and the silos of individual professions [is urgently needed]. …..To have a positive effect on health outcomes, the professional education subsystem must design new instructional and institutional strategies.* (Frenk et al., 2010) p.1923

All these major reports specifically identify interprofessional and transprofessional education as instructional reforms necessary not only to enhance collaborative relationships and effective teamworking, but also to foster analytic decision-making, ethical deliberation, leadership and management capability. Clinicians in practice have recognized IPE as an innovative *'value proposition directed at high quality, interprofessional patient/client care'* (Seymour, Cooper, Farley, & et al., 2013) p.1. While learning together enhances future working together (Thistlethwaite, 2012), it also fosters deeper transformative learning about the nature of health care.

The power of the 'hidden curriculum' (Hafler et al., 2011) (also see Section 2.4) in health care education has been well described as an important and formative influence. What students observe in practice, particularly in clinical workplaces, can, for better or worse, reinforce or undermine what is taught more formally. Interprofessional practice needs to be role-modelled in clinical settings, if it is to become embedded (Lempp & Seale, 2004); so placement choice is important. Yet, even where this falls somewhat short, if students have been previously engaged in intentional high-quality IPE, this can give them tools to understand where there is room for improvement, and gradually influence change in practice.

In our own part of the world, through a comprehensive Australian review of the literature and concomitant IPE progress in Australia over the last 30 years, our regional key policy drivers are well described: health demographics and inequalities, demand for new models of health care, empowered consumers, a focus on patient/client safety, and national health workforce shortages. If anything, all these drivers have become more urgent and more imperative since the report was written in 2011; the need for change is undiminished. In short, 'Globally, the policy drivers for interprofessional education reflect the increasing pressures on the healthcare system' (Nisbet, Lee, Kumar, Thistlethwaite, & Dunston, 2011) p.7.

1.4 Interprofessional education as educational theory and philosophy

IPE has now developed to the point where it is emerging as a philosophy of learning, drawing on educational, social and psychological underpinnings. The values ascribed to IPE encompass a focus on needs of individuals, families and communities, equal opportunities within and between the professions, respect for individuality, difference and diversity, the sustaining of professional identity and expertise, and promotion of parity between the professions in the learning environment (Barr & Low, 2011).

Hean, Craddock and Hammick (who have each written widely about theoretical underpinnings for IPE) highlight the importance of IPE as a social learning construct, consistent with principles of adult learning theory, social capitalism, and communities of practice.

> *Building social relationships between learners (and teaching staff) from different professional groups should be an explicit aim of an interprofessional education curriculum.* (Hean, Craddock, & Hammick, 2012) p.79

The widely accepted definition of IPE derives from these concepts. By definition, IPE is an interactive learning modality (Hammick, Freeth, Koppel, Reeves, & H, 2007), where the interprofessional nature of the learning is made explicit, with intended learning outcomes relating to interprofessional competencies. 'Something must be exchanged among and between learners from different professions that changes how they perceive themselves and others' (Thistlethwaite, 2012) p.59. In a clinical setting, learners can intentionally come together to share in decision-making about patient/client care.

1.5 Research into interprofessional collaborative practice (IPCP) and IPE

In any developing area of complex endeavor, research is an essential element of robust progress, not only to demonstrate short term efficacy and safety (Pullon, Darlow, & McKinlay, 2016), but here also to explore and investigate the nature of collaborative practice in the wider context of health and social care. Evaluation of interprofessional education (as described in Chapter 7) goes hand-in-hand with research into new ways of approaching and implementing collaborative care, as well as progressively embedding interprofessional education into everyday clinical practice. Education, and educational research, have potential in many settings to lead the way towards more collaborative and integrated patient and community care.

Opportunity for exploratory 'blue skies' research is essential to foster innovation and create new knowledge. Theory development (Flood, 2017; Hean, Green, Anderson, & et al., 2018a; Pullon, Darlow, et al., 2016; Wong, Greenhalgh, Westhorp, & Pawson, 2012), health service user perspectives (the patient voice) ((Doolan-Noble, Pullon, D, Dowell, & Love, 2019), new models-of-care creation (McKinlay, Morgan, Gray, Macdonald, & Pullon, 2017), and initial translation into practice (Rose et al., 2019) form a continuum of research enquiry: all have a place as health and social care systems are changing more rapidly than ever before.

Critical and rigorous appraisal of efforts to create and incentivise more coordinated care is essential to determine longer-term effectiveness, and identify pitfalls or unintended adverse consequences, as early as possible. For example, recent New Zealand initiatives such as whānau ora (Te Puni Kokiri, 2019), patient care pathways, and health care homes (Health Care Home Collaborative, 2019), generate new research questions even as they are trialled and rolled out more widely. Health care implementation projects which may be highly successful on a small scale, inevitably present new problems and challenges as they are taken up more broadly. The same can be said of interprofessional education implementation: high-quality research will advance knowledge.

1.6 Progress to date at Otago

Principles and practices of interprofessional education were adopted at Otago in a number of postgraduate education qualifications from as long ago as the mid-1990s. These have been in diverse settings, such as rehabilitation, primary health care, travel medicine, aviation medicine and public health - in part informed by earlier New Zealand work (Horsburgh, Lamdin, & Williamson, 2001; Sheehan, 2011; Sheehan & Wilkinson, 2007).

At undergraduate (pre-registration) level, following the instigation of a small pilot IPE learning activity at UOW in 2011, involving dietetic, medical, and physiotherapy students, the launch of the Tairāwhiti IPE programme (TIPE) in 2012, and the development of the INTERact learning activity in Timaru from 2015, other staff proposed further new and innovative ideas. It became obvious that a more systematic approach to IPE was needed across the Health Sciences Division. With the support of Pro-Vice-Chancellor Peter Crampton, a cross-disciplinary group of interested individuals from across the Division (and including staff from the Master of Dietetics programme located in the Faculty of Sciences) formed the Division of Health Sciences IPE Governance Group (DIPEGG). The Chair (A/Prof Sue Pullon) and Deputy Chair (Dr Margot Skinner), together with a part-time administrator (Michelle O'Brien), consulted widely across and beyond the Division to explore, formulate and discuss a Divisional Strategic Plan for IPE (O'Brien, Pullon, & Skinner, 2015). The strategic plan was ratified by the Divisional Executive in October 2015.

The vision articulated in the Strategic Plan was to: "Establish (the University of) Otago as a national leader in IPE across the health professions" - for further details, see Section 9.1.

1.6.1 Establishment of the IPE Centre

As a result, the Division of Health Sciences Centre for Interprofessional Education Centre at Otago (the 'IPE Centre') was formally established in November 2016, with Ashley Symes ably taking up the role of IPE Centre Manager, having previously replaced Michelle O'Brien as project manager. Initial

tasks for the IPE Centre included setting out the Centre's key aims, functions and reporting lines, establishing a coordinated but distributed structure that would work for all locations, updating terms of reference for DIPEGG and ensuring formal disciplinary representation at governance level from all schools and faculties, providing information to all staff via a Divisional IPE website (www.otago.ac.nz/ipe), appointing a director, establishing fractional academic campus leader roles, and securing a small amount of dedicated administration time. The importance of high-level support and effective governance cannot be underestimated when establishing and integrating IPE components into well-established programmes. (See Chapter 3 for governance and operational rationale and details.)

The IPE Centre aims to lead the development and consolidation of IPE for pre-registration students by establishing guidelines and standards based on current knowledge and international trends; and supporting and coordinating learning activities, mainly hosted by departments at different campuses and in regional learning centres. Postgraduate IPE is also within its brief, while IPE for pre-registration students is the agreed focus and priority for 2016-2019.

Professional development for teachers and facilitators of IPE has proved to be an important step in establishing and supporting high-quality learning activities; this remains an area of 'work in progress', both for the Centre and for the Division as it progressively adapts resources and workload modelling to support IPE.

The nature and key work of the Centre continue to evolve; twice-yearly reports to the Divisional Executive, and annual evaluation reports (available at http://www.otago.ac.nz/ipe/resources), detail changes, such as the need to actively design, instigate and organise the large-cohort (700+ students) entry-level IPE learning activity.

The current IPE Centre is small, virtual and distributed across our campuses. Current staff (total 0.65FTE academic, 2.6FTE professional) (July 2018) are listed in Chapter 3 (Section 3.2).

1.6.2 Conceptual model development

Understanding how and why introduction of interprofessional education can help meet many desired learning outcomes across the health professional degrees, is complex. Although the CIHC framework (CIHC Canadian Interprofessional Health Collaborative, 2010) gave a useful and essential starting point for us at Otago, over time it became clear that:

- Cognisance should also be taken of other more recently formulated IP frameworks
- Our own New Zealand and Pacific context needed far better reflection in our IPE learning activities, including the explicit addressing of health inequities, and
- IPE supports, and is part of, far more explicitly: improved quality and safety; meaningful social accountability; rural health and the health of rural communities; with the individual and their whānau firmly at the centre of care.

To this end, the IPE Centre, with consultative help from DIPEGG, formulated both a process model (see Chapter 3) and a conceptual model (see **Figure 1**) for IPE at Otago (Division of Health Sciences

Centre for Interprofessional Education (IPE Centre), 2017). These models clarify where and how successive, progressive IPE learning activities, might enrich uniprofessional degree programme curricula with interactive transformative learning processes, and also simultaneously meet a number of key, required IP learning outcomes.

The IPE conceptual model was developed in 2017, drawing on literature and models in the field (Division of Health Sciences Centre for Interprofessional Education (IPE Centre), 2017). It was reviewed in 2018, and will continue to be reviewed from time to time, to ensure it accurately captures Otago's shared understanding of interprofessional education.

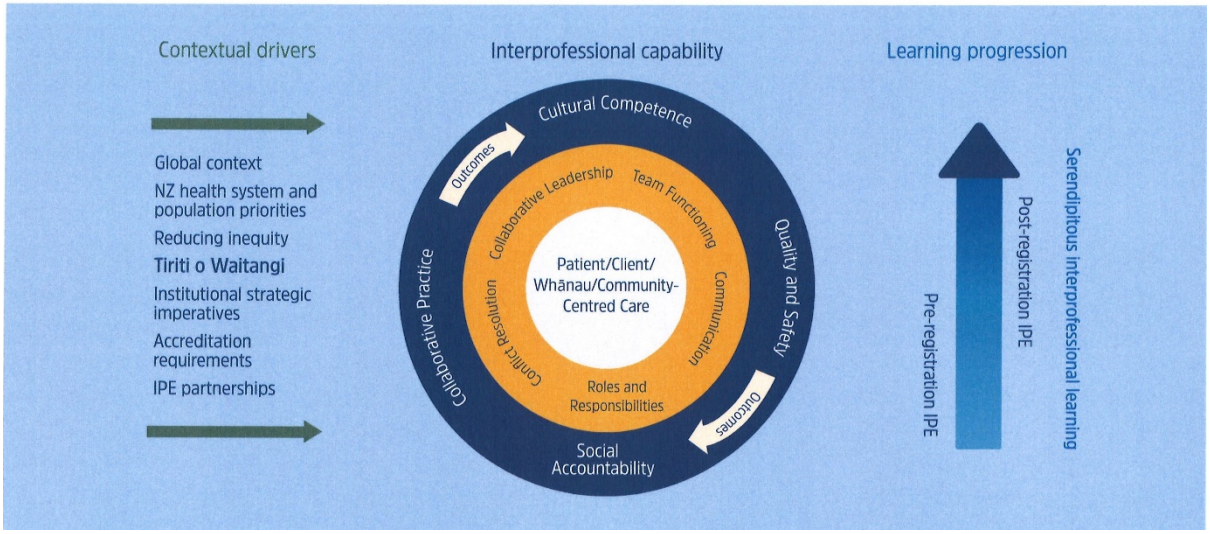

Figure 1: The IPE conceptual model at Otago, 2018-2019

The conceptual model incorporates these core ideas:

Contextual drivers:

- The contemporary global context for health care is driven by needs for sustainability, efficiency and high-quality care for patients/clients
- The New Zealand context for health care is driven by special obligations under the Treaty of Waitangi, and the particular needs of Māori, Pacific, rural and disadvantaged populations
- Health and education systems share contextual drivers and respond through innovation and partnership to support changes in health delivery systems.

Interprofessional capability:

- Health and education systems centre on the needs of the patient/client/family/community
- Health and education systems are bridged by a capability framework for pre- and post-registration professionals: the IPE competencies lay the foundation for effective collaborative practice to optimise clinical outcomes

- Capabilities developed through IPE in health professional programmes are applied and consolidated collaboratively in clinical and workplace settings.

Learning progression:

- IPE competencies (capabilities) are acquired through stepped levels, as students and professionals progressively learn with, from and about each other
- Interprofessional learning may be serendipitous in a range of settings, and valuably augment more formal planned learning
- IPE requires planned interaction and formal learning activities scaffolded through the curriculum, and assessed to support progression
- IPE competencies are acquired to support and integrate with Otago/Health Sciences graduate profiles.

1.6.3 Current graduate profiles and accreditation standards

In the 2015 IPE Strategic Plan, graduate profiles for the degree programmes in Dietetics, Dentistry, Medicine, Pharmacy and Physiotherapy were carefully mapped to the IP competencies as outlined in the CIHC framework and adopted in the strategy. There was considerable congruence across the degree programmes, and all listed most of these in some way as requirements in principle.

Since then, graduate profiles have continued to cohere, wherever they have been reviewed, e.g. under the impetus of the Otago generic undergraduate profile (University of Otago, 2013) which makes such requirements explicit. For example, the generic undergraduate profile's competency in 'interdisciplinary perspective' aligns with the IP competency of 'role clarification'; 'communication' with IPE's 'interprofessional communication'; 'cultural understanding' and 'ethics' with IPE's 'patient-/client-/whānau-/community-centred care'; 'teamwork' with IPE's 'team functioning' and 'collaborative leadership'. Each health professional programme graduate profile co-aligns in turn, with customised detail as needed. (For details, see Section 9.2.)

Most regulated health professionals in New Zealand are governed by the Health Practitioners Competence Assurance Act 2003 (the HPCAA). The Act requires a range of regulatory bodies (e.g. Nursing Council of NZ, Medical Council of NZ, Pharmacy Council) to ensure safe and effective practice that protects the public. As the previous Health and Disability Commissioner, Ron Paterson said,

> *The days of the brilliant solo operator in medicine are gone. From primary to tertiary care, healthcare is delivered by teams, and the ability to be a team player is essential for the team to function well for the benefit of patients/clients.* (Paterson, 2010) p.7

Similarly, the New Zealand Health Quality and Safety Commission endorses the importance of health professionals' *'*appreciating the health system as a dynamic, adaptive collection of interrelated and interdependent components*'* (Health Quality and Safety Commission, 2016) p.10.

In recognition of the importance of individual practitioners having collaborative practice skills, the Health Practitioners Competence Assurance Amendment Act 2019 (passed on 09 April 2019) explicitly requires professional regulatory authorities 'to promote and facilitate inter-disciplinary collaboration and co-operation in the delivery of health services': Section 118 (amended) (Functions of authorities) – see http://legislation.govt.nz/act/public/2019/0011/latest/whole.html#LMS12004 (accessed 25 October 2019).

In Australia (which is of particular relevance for those New Zealand educational degree programmes and institutions accredited in whole or in part by their Australian counterparts), there is now a strong call for interprofessional education to be developed nationally and be a mandatory component of health professional education (Dunston et al., 2016). As a result of a recent independent review of health professional education in Australia, and associated wide consultation across the professions, with other key stakeholders and with the public, the Australian Health Ministers' Advisory Council of the Council of Australian Governments/COAG (Woods & COAG Health Council, 2017, released October 2018) made the following recommendation, several of which are of particular relevance to interprofessional education at pre-registration level:

- Adoption of outcome-based approaches for accreditation standards
- Adoption of a common approach to the development of domains and learning outcomes for competency standards for professions by registration boards, to ensure relevance to contemporary health care needs and to reflect workforce priorities including cultural safety
- A common cross-professional approach to the active support for interprofessional education in all accreditation standards and assessment
- A requirement that clinical placements occur in a variety of settings, geographical locations and communities, with a focus on emerging workforce priorities and service reform
- Encouragement of innovative implementation of technological and pedagogical advances, such as simulation-based education and training, in the delivery of programmes of study.

1.6.4 Why a quality framework?

The case for interprofessional education to form a core part of pre-registration health professional degree programmes is strong and increasing. Best-practice patient/client care now demands effective and safe collaborative practice; individual patients/clients and their whānau, the health system, and the health workforce, stand to benefit in numerous ways. At Otago, we have made good progress in being well-placed for next steps to meet new registration, and accreditation, expectations - in Australasia and internationally - for pre-registration students. A range of discrete learning activities has been developed, refined and evaluated, with each activity meeting recognised standards for IPE, and adding important new knowledge to educational practice within our institution - and within partner tertiary institutions and health providers - and to the published literature.

A quality framework though, goes beyond defining a range of learning activities (no matter how good each is in its own right), to consider the programmatic whole. A quality framework includes a

vision and a strategy, and a clear idea of the key drivers for change. Formal cross-disciplinary governance, and a resourced operational structure, are now recognised as essential for the integration and sustainability of interprofessional activity at institutional level, and these should form part of IPE quality assurance and quality indicators.

At Otago, the Divisional ratification of a strategic plan, the formalisation of DIPEGG, the establishment of the IPE Centre, and the development of a conceptual model, have started the process of establishing quality at institutional level. Chapter 2 makes the case for a common language and agreed conceptual definitions for IPE, while Chapter 3 considers our current governance and structural model, and makes recommendations for some changes.

However, given Otago's impressive number of health professional degree programmes and the consequent complex matrix of professional and student expectations, regulatory requirements, societal contexts, community expectations, varying lengths of programmes, and historic programmatic structures, there is a clear need now to develop a formal, agreed quality framework that clearly articulates an agreed, common IPE curriculum across degree programmes: this is the subject of Chapter 4. Such a curriculum needs to carefully consider student assessment as an important component of outcomes-based education, as discussed in Chapter 5. To be fair and effective, an IPE curriculum also needs a mechanism for valuing, setting and monitoring standards at learning activity and programmatic levels (Chapter 6). Ongoing evaluation and research, and support for staff and students, also need to be included (Chapter 7). This quality framework sets out conclusions (Chapters 4, 5, 6 and 7) for ways in which to build on work to date, and provide a blueprint for work going forward over the next five to 10 years.

2 Chapter 2: Definitions for a quality framework

2.1 A common language for interprofessional education and practice

Development of a common language of terms is an important prerequisite for interprofessional education and practice, if teachers, practitioners and learners are to fully understand each other (Bainbridge, Nasmith, Orchard, & Wood, 2010; Thistlethwaite et al., 2014). While not surprising that different health and social care professions have developed subtly different terms for similar concepts, given the different paradigms they have come to understand and operate within, common language is needed when health and social care practitioners are collaborating together for best patient/client care.

Similarly, educators, used to uniprofessional teaching and learning, also need common agreed language to best understand each other interprofessionally. This is not to undervalue professional identity, but the reverse: to better understand both difference and common ground (Davies, 2000; Dunston et al., 2009). Differences in perspectives can and should complement each other; no one health professional has all the skills necessary to provide best care for patients/clients with complex problems, often over time, in the context of modern health and social care, yet each brings valuable knowledge and perspective to complex problem-solving.

The definitions given here (selected term in **bold**) are used throughout this document, and come from a variety of sources. Well-established definitions and sources have been used and referenced wherever possible, but some definitions have had to be adapted for new use throughout this framework document. Wherever possible these have been discussed and agreed and, as such, some will continue to change over time.

The definitions are closely related and grouped into the following categories for convenience: Interprofessional practice; Interprofessional education principles; Educational organisation: Educational equivalence. There is occasional repetition within categories for clarity.

2.2 Health and social care in interprofessional education and practice

Health care - organised provision of services to individuals or communities, for the maintenance or improvement of health via the prevention, diagnosis, and treatment of disease, illness, injury, and other physical and mental impairments in people.

Social care - the care and support of vulnerable people, usually in the community.

Health and social care professions* – Interprofessional collaboration and interprofessional education involve health and social care professionals, and may well also engage other professions and roles. Health and social care is the treatment of ill health and medical conditions in hospitals, health centres and in the community.

* In this document, we sometimes use ‘health professions’, or similar, as concise shorthand which can be taken to include social care professions wherever relevant.

Health professionals are individuals accredited by a professional body upon completing a course of study, and usually licensed by a government agency or professional body. Health professional programmes at the University of Otago include: Dental Technology, Dentistry, Dietetics, Medical Laboratory Science, Medicine, Nursing, Oral Health, Pharmacy, Physiotherapy and Radiation Therapy. Other health professional disciplines include e.g. Clinical Psychology, Occupational Therapy, Paramedicine and Speech Language Therapy.

Social care professionals give practical and emotional support to a wide range of different people. Working with individuals, families and communities, they often help to protect and promote people's wellbeing so that they can enjoy a better quality of life. Social Work is a social care professional programme at Otago. Other social care professions include e.g. counsellors, mental health support workers, kaiāwhina, complementary therapists, police and fire services.

Patient-centred care – collaborative, coordinated and integrated care, aligned with the goals of patients/clients/consumers and their whānau/family/kāinga/community*. Feedback from these individuals and groups is important for assuring the quality and outcomes of interprofessional collaboration and IPE.

* In this document, we sometimes use 'patient/client (care)', or similar, as concise shorthand which can be taken to include all of patients/clients/consumers and their whānau/family/kāinga/communities, wherever relevant.

**It can be noted that other academic disciplines have a role in helping our understanding of all facets of interprofessional education and practice, e.g. anthropology, sociology, economics, political science, and others.

2.3 Interprofessional practice

IPC – Interprofessional collaboration - an active and ongoing partnership often between people from diverse backgrounds with distinctive professional cultures, who work together to solve problems or provide services (Barr et al., 2005).

IPCP – Interprofessional collaborative practice - when the key elements of collaboration are successfully implemented in a practice setting (Morgan et al., 2015; World Health Organization, 2010a).

Collaborative practice-ready workforce - a specific way of describing health workers who have received effective training through *interprofessional education*. 'Once students understand how to work interprofessionally, they are ready to enter the workplace as a member of the collaborative practice team' (World Health Organization, 2010a) p.10.

2.4 Interprofessional education principles

IPE – Interprofessional education - occurs 'when learners of two or more health or social care professions engage in [intentionally] learning with, from, and about each other to improve collaboration and the quality of care and services' (Centre for Collaborative Health Professional Education (CAIPE), 2017).

Defining features of IPE – an interactive learning modality (Hammick et al., 2007), where the interprofessional nature of the learning is made explicit, with intended learning outcomes relating to interprofessional competencies. 'Something must be exchanged among and between learners from different professions that changes how they perceive themselves and others' (Thistlethwaite, 2012) p.59.

IPL – Interprofessional learning - learning arising from interaction involving members or students of two or more professions. It may be a product of *interprofessional education*, or it may occur spontaneously in the workplace or in education settings and therefore be serendipitous (Freeth et al., 2005; Institute of Medicine, 2015).

Multidisciplinary education - sometimes used interchangeably with multiprofessional education (see below) and may also refer to education between branches of the same profession or between academic disciplines (Barr & Low, 2013).

Multiprofessional education - occasions when professions learn side by side for whatever reason (Barr & Low, 2013).

Transprofessional education - knowledge across service agencies for integrated service provision (Hulme, Cracknell, & Owens, 2009).

Hidden curriculum – 'The "processes, pressures and constraints which fall outside . . . the formal curriculum, and which are often unarticulated or unexplored." It has been argued that hidden aspects of the curriculum are especially important in professional education, which characteristically includes prolonged periods of exposure to the predominant culture.' (Lempp & Seale, 2004) p.770. Both faculty and students experience "arenas of influence" related to the hidden curriculum, for example: '1) those social activities formally structured and intended, (2) those social activities that are more informal, unplanned, and unscripted, and (3) those influences, such as organizational culture and place, that are more invisible and ethereal in their presence and impact' (Hafler et al., 2011) p.440.

2.5 Interprofessional educational organisation

Note: Several notions of related concepts have been proposed by various authors. As Thistlethwaite and Moran (Thistlethwaite & Moran, 2010) neatly summarised, and further discussed (Thistlethwaite et al., 2014), these words have sometimes been used synonymously, sometimes as complementary, but all are aiming to describe what participants would achieve as a result of a learning activity/intervention/input/initiative:

- Learning objectives (e.g., Charles, Bainbridge, & Gilbert, 2004)
- Competencies (e.g., Freeth & Reeves, 2004)
- Capabilities (e.g., Gordon & Walsh, 2005)
- Outcome-based education (e.g., Nisbet et al., 2008)
- Competency-based education (e.g., Barr et al., 2005).

For the purposes of this framework, we have pragmatically chosen to refer to 'competencies', but recognise that the term 'capabilities' is closely related, if slightly broader in its definition.

Competency*

A competency constitutes specific knowledge, skills, attitudes, values and judgments that are dynamic, developmental and evolutionary. Competency statements should be overarching statements that last reasonably well over time. (Bainbridge et al., 2010)

Interprofessional (IP) competency*

An **IP competency** is 'the integrated enactment of knowledge, skills and values/attitudes that define working together across the professions, with other health care workers and with patients/clients, along with families and communities, as appropriate to improve health outcomes in specific care contexts' (Bainbridge et al., 2010). Individuals develop and achieve IP competencies by learning and/or working with others from different health discipline degree programmes' (Forman & Thistlethwaite, 2016).

Profession-specific competency

A competency identified within a profession with input and concurrence of the profession's regulators, educators, and practitioners. They tend to reflect the practice of a professional within their own profession with, at best, limited attention as to how these same professionals interact with those of other health professions. (Bainbridge et al., 2010)

Interprofessional (IP) team competency or capability (specific learning outcomes achieved)

An IP team competency is a competency that a group of learners from different health discipline degree programmes (or different professional groups) develop and achieve as an interprofessional team by learning and/or working together.

Interprofessional competency domain*

A generally identified cluster of more specific interprofessional competencies that are conceptually linked, and serve as theoretical constructs (ten Cate & Scheele, 2007).

* definitions also cited (Forman & Thistlethwaite, 2016)

The six IPE core competency domains at Otago comprise (see Sections 4.9.1 and 5.3):

- Interprofessional communication
- Role clarification and appreciation
- Reflective practice, incorporating interprofessional principles, values, ethics
- Teamwork and team functioning, including conflict negotiation and resolution

- Collaborative leadership and followership
- Interprofessional coordination and shared decision-making.

Competency framework

A set of competencies grouped together for a particular profession; a blueprint for optimal performance in a given area of practice. Can also be referred to as **professional accreditation standards** (if stipulated by professional licensing bodies). (Thistlethwaite et al., 2014)

Interprofessional (IPE) competency (or capability) framework

A set of competencies grouped together relevant to all professionals; a blueprint for optimal interprofessional practice (Thistlethwaite et al., 2014). Several interprofessional competencies can, and usually are, also included in profession-specific competency frameworks.

Learning objective

Learning objectives, in contrast, are statements of intent about what is intended to be learned or achieved, but do not necessarily imply that the behaviour has been demonstrated. They tend to be far more specific, describing discrete units of knowledge and skill, than learning outcomes. (Elihu Burritt Library; Harden, 2002)

Learning outcome

Learning outcomes are statements of what the individual knows, understands and is able to do on completion of a learning process. The achievement of learning outcomes has to be assessed through procedures based on clear and transparent criteria. Learning outcomes are attributed to individual educational components and to programmes as a whole. (European Commission & Bologna Process, 2015) p.10

In an **IPE curriculum**, each **learning activity** has defined learning outcomes (often arranged in domains), which include specific IP and/or IP team competencies, and which contribute to the overarching learning outcomes for the IPE curriculum as a whole. The level of learning can be incorporated in the learning outcome.

Interprofessional learning outcome

The acquisition of knowledge, skills or attitudes where IPE adds value to the learning experience because of the interaction between participants, and which facilitates the achievement of interprofessional competencies (or a set of interrelated competencies such as communication, teamwork, and collaborative practice skills) (Thistlethwaite & Moran, 2010). In this sense, a learning outcome is a more complex achievement than simply the sum of a number of discrete competencies.

Multiprofessional learning outcome - achieved by two or more professions

The acquisition of knowledge, skills or attitudes which are shared by more than one profession and could be achieved uniprofessionally or multiprofessionally, but where neither mode of delivery has any effect on the outcome. For example, person-centred care, or knowledge of anatomy and physiology, could be delivered to an audience of a number of different health professionals, where the need for such learning is common across the professions. (Thistlethwaite & Moran, 2010)

Profession-specific learning outcome (and/or topic-specific outcome)

The acquisition of knowledge, skills and/or attitudes that relate to a specific profession, and/or topic (adapted from (Thistlethwaite & Moran, 2010).

IPE learning activity (synonymous with programme component/module/course unit/study unit or unit)

An **IPE learning activity** at pre-registration level is a discrete module/programme/package of learning that intentionally brings students together from two or more (preferably three or more) health professional degree programmes, to learn in interactive ways with, from and about each other, often about a common topic area. (See Chapter 6 for recommended criteria for IPE learning activities.)

Characteristics of IPE learning activities

These characteristics, or properties, have been developed from the literature and our own experience to date. Learning outcomes include specific interprofessional competencies. Learning activities have been defined and, as such, must meet certain quality and safety criteria to be included in the IPE curriculum (Nisbet et al., 2011), p.24.

Minimum requirements/prerequisites for IPE learning activities

All **IPE learning activities** must have as a minimum prerequisite:

- Full involvement of students from two or more (preferably three or more) professions; and of staff from two or more professions wherever possible
- At least one IP learning outcome must be explicit to students and staff at the outset
- The learning must be predominantly interactive
- There must be explicit assessment of at least one IP competency domain.

IPE curriculum - synonymous with IPE longitudinal curriculum/IPE vertical curriculum/IPE common curriculum.

An **IPE curriculum** is an explicit required course of study for health professional students, built from a menu of successive learning activities, which extends longitudinally over the years of a health professional **degree programme**. It is common across different degree programmes within one or

more institutions. It recognises different levels of learning at different stages of training, and is embedded as core content within degree programmes.

Degree programme (here meaning health professional degree programme)

A health professional **degree programme** (pre-registration) is a set of educational components constituting a defined, accredited, extensive programme of pre-registration study including, but not restricted to, **clinical workplace** learning; lasting at least one, and usually several, years; that, when all the requirements are successfully completed, prepares students to meet the requirements to be legally registered as a named, defined health professional (extended from (European Commission & Bologna Process, 2015) p. 68). Such registration enables health professionals to be able to practise within a legally defined scope of practice.

(The University of Otago defines a **programme** as 'The entire requirements for the qualification towards which a student is studying (e.g. a certificate programme or **degree programmes**)' – see https://www.otago.ac.nz/study/terms.html#p)

Clinical workplace learning

A **clinical workplace** is defined as a health or social care setting where patient/client care is being routinely and actively undertaken, and students are able to learn by observing widely and participating in some aspects of usual care. Settings might include hospitals, ambulatory care services, primary care settings and community outreach services.

Progression of IPE learning across the IPE curriculum

Varying levels of learning complexity all have a place on the continuum of interprofessional learning, with each being a necessary part of a vertical or spiral curriculum (Harden & Stamper, 1999) – from initial exposure in the early years of a degree programme, through to engagement-type learning activities, with immersion-type learning occurring in clinical workplaces:

- **Exposure** – an IPE learning activity that meets the minimum requirements and is case-based or problem-based, but does not need to involve patients/clients either simulated or actual
- **Engagement** - an IPE learning activity that meets the minimum requirements and involves patients/clients either simulated or actual, but not in a clinical workplace where care is undertaken
- **Immersion** - an IPE learning activity that meets the minimum requirements and is based in a clinical workplace where students participate in usual care
    - **Complex immersion** – an IPE programme for advanced-level students, whose design incorporates multiple opportunities for structured and unstructured IP learning, and self-reflection
    - **Towards mastery** – an advanced-level IPE experience (typically immersion or complex immersion) providing opportunity to learn and reflect on IP concepts for progressive incorporation into daily professional practice at new-graduate and graduate level.

Serendipitous IPL

Interprofessional learning (IPL) that arises spontaneously when opportunities arise for learning with, from and about health professionals (or students) of disciplines other than one's own. IP learning outcomes are not defined or explicit at the outset.

Many opportunities for **serendipitous IPL** arise over the course of a **degree programme**, particularly in **clinical workplaces**. While this IPL usually does not meet the criteria for defined **IPE learning activities** shown above, such IPL often provides excellent opportunity to extend and consolidate prior and concurrent IP learning. Such opportunities can sometimes be developed to meet defined learning outcomes.

2.6 Educational equivalence

These concepts for developing educational equivalence within our institution, are broadly based on definitions cited in the pan-European European Credit Transfer System framework (European Commission & Bologna Process, 2015) for educational equivalence across tertiary teaching institutions and countries in the European Union, known as the Bologna Process. While the Bologna Process is intended to incorporate many levels of learning, from single course components to qualifications, the principles of establishing equivalence are nevertheless appropriate for interprofessional learning activities across degree programmes, and lend themselves to extension to other partner institutions. Such a system of educational equivalence improves transparency for students and enables transferability (see Chapter 6).

Learning outcomes

> *Learning outcomes are statements of what the individual knows, understands and is able to do on completion of a learning process. The achievement of learning outcomes has to be assessed through procedures based on clear and transparent criteria. Learning outcomes are attributed to individual educational components and to programmes as a whole.* (European Commission & Bologna Process, 2015) p.10

In an **IPE curriculum**, each **learning activity** has defined learning outcomes, which must include IP and/or IP team competencies, which contribute to the overarching learning outcomes for the IPE curriculum as a whole. The level of learning can be incorporated in the learning outcome.

Workload (learner workload)

> *Workload is an estimation of the time the individual typically needs to complete all learning activities such as lectures, online work, seminars, projects, practical work, work placements and individual study required to achieve the defined learning outcomes in formal learning environments.* (European Commission & Bologna Process, 2015), p.10

For example, at Otago, each paper has a points value where one point generally represents ten hours of work for an average student wishing to achieve an average grade (e.g. typically 120 points

for each year of a health professional degree programme (see https://www.otago.ac.nz/study/planning/workload.html).

Credits

Credits are a student-centred system which express 'the volume of learning based on the defined learning outcomes and their associated workload' (European Commission & Bologna Process, 2015) p.10.

Allocation of credits

'Allocation of credits is the process of assigning a number of credits to qualifications, degree programmes or single educational components' (European Commission & Bologna Process, 2015), p.11. Within an IPE curriculum, credits can be allocated to each **learning activity** and accumulated to complete the **IPE curriculum**.

Awarding of credits

Credits are awarded to individual students after they have completed the required learning activities and achieved the defined learning outcomes, as evidenced by appropriate assessment (European Commission & Bologna Process, 2015), p.11.

2.7 Conclusion for a common IPE language at Otago

Conclusion 1: A common IPE language

A common language for interprofessional education and practice is imperative if teachers, practitioners and learners are to fully understand each other at and beyond our institution. Terms widely accepted for common usage relate to: interprofessional practice, interprofessional education, IPE learning objectives, IPE competencies/capabilities and outcomes, progression/complexity of IPE learning, and systems of educational equivalence for interprofessional learning.

3 Chapter 3: IPE governance and operations at Otago

3.1 IPE governance

Responsibility for ensuring successful IPE implementation at Otago rests with the Health Sciences Divisional Interprofessional Education Governance Group (DIPEGG), and the Centre for Interprofessional Education ('IPE Centre'), with reporting to the Divisional Executive through the Pro-Vice-Chancellor.

The configuration of IPE governance structures, at Divisional and campus levels, is set out in **Figure 2**.

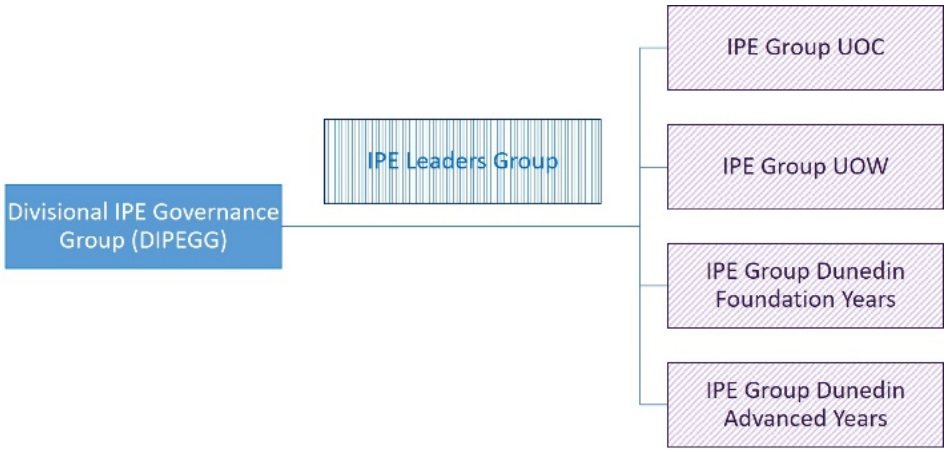

Figure 2: IPE divisional and campus-level governance, 2018-2019

Established in 2014, DIPEGG was reconfigured in April 2017 to ensure representation from all relevant disciplines and programmes, albeit with some members wearing more than one 'hat'. This includes the University's health professional degree programmes (dentistry, medicine, nursing, oral health, pharmacy, physiotherapy, radiation therapy, medical laboratory science) and relevant postgraduate courses, plus dietetics from the Faculty of Sciences. Medicine has representation from both ALM (Years 4, 5 and 6 of the MBChB) and ELM (Years 2 and 3 of the MBChB).

DIPEGG's remit is to:

- Maintain strategic oversight of the IPE Centre and the Division's IPE activities
- Critically review and approve IPE policies and frameworks to guide the concept and practice of IPE across the Division
- Leverage the allocation of resources where needed from Deans/Schools/Faculties/Departments for the IPE Centre and/or IPE Campus Groups and/or to support staff IPE workload in the Schools/Faculties/Departments.

3.2 IPE Centre operations

The **IPE Leaders Group** comprises ex officio members of the IPE Centre and functions as the executive committee of DIPEGG. It provides leadership to IPE activities across the Division and strategic support to IPE Campus Groups.

At campus level, each **IPE Group** serves as the IPE leadership team for the campus, modelling the principles of interprofessionalism by bringing representatives from different professions together (including professions educated in other Divisions and at other tertiary institutions in the local regional area, as well as their health professional students).

The **IPE Centre** structure and its reporting arrangements* are set out in **Figure 3**.

*From late 2018, in line with the University's Support Services Review, the three IPE administrators are Client Services Administrators managed within the Shared Services Division, and supervised by the IPE Centre Manager.

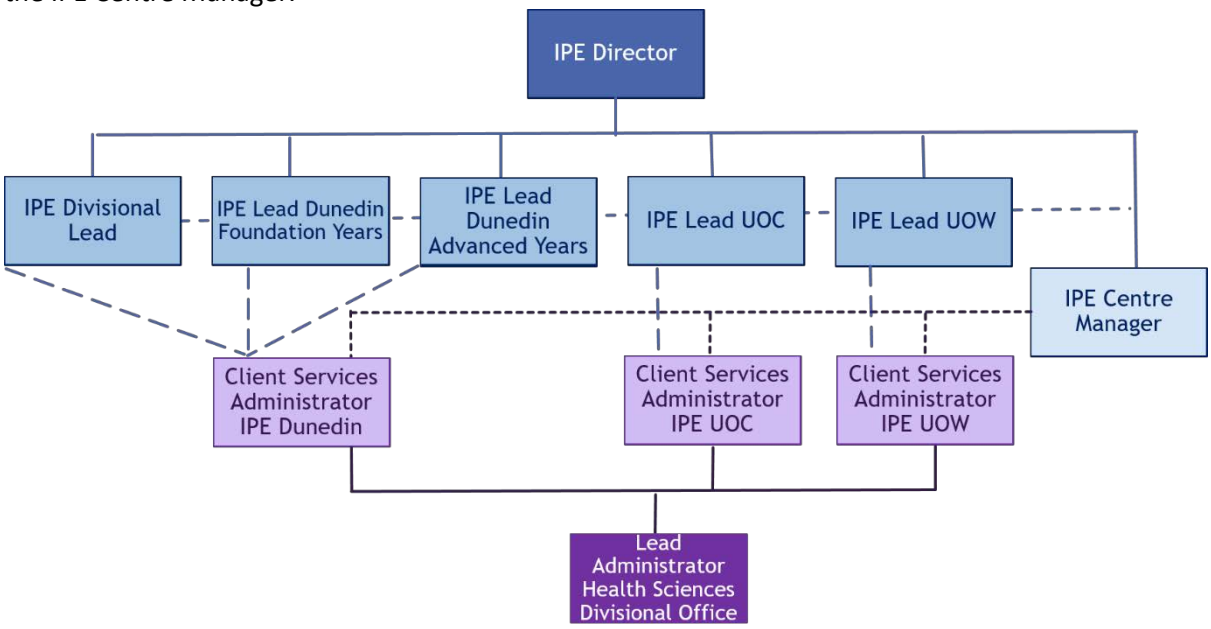

Figure 3: IPE Centre overview and reporting, 2018-2019

The IPE Centre Director reports directly to the Divisional Executive through the Pro-Vice-Chancellor, and also to DIPEGG (currently 17+ members). The IPE Director is Chair, and the IPE Divisional Lead is Deputy Chair, of DIPEGG. Together with academic IPE Campus Leads and the IPE Centre Manager, they comprise DIPEGG's executive committee (7 members), and Leads chair their respective campus groups. The Divisional Lead assists with Dunedin-based business which – in proportion to the size of the campus – is more extensive than at other sites. IPE campus administrators (embedded Administrators Client Services) are at each campus and supervised by the IPE Centre Manager, as well as working closely with the academic Leads. Appointees are drawn from across the Schools, health sciences professional programmes and disciplines, and as at October 2019 comprise:

- IPE Director: Professor Sue Pullon (Primary Health Care and General Practice (OMS Wellington); Director of Tairāwhiti IPE Programme) (medical doctor/general practitioner)

- IPE Divisional Lead: Dr Margot Skinner (School of Physiotherapy) (physiotherapist)
- IPE Lead Dunedin Foundation Years: Aynsley Peterson (School of Pharmacy) (pharmacist)
- IPE Lead Dunedin Advanced Years: Dr Fiona Doolan-Noble (General Practice & Rural Health, OMS Dunedin) (nurse)
- IPE Lead UOC: Louise Beckingsale (Human Nutrition, Dietetics) (dietitian)
- IPE Lead UOW: Associate Professor Eileen McKinlay (Primary Health Care & General Practice, OMS Wellington) (nurse)
- IPE Centre Manager: Ashley Symes
- IPE Campus Administrators: Angela Findlay (Dunedin); Marissa O'Leary (UOC); Tracy Farr (UOW).

The IPE Centre is virtual and distributed, structured along a matrix model and with multiple linkages across the campuses, regional centres and community partnerships of the Division (**Figure 4**).

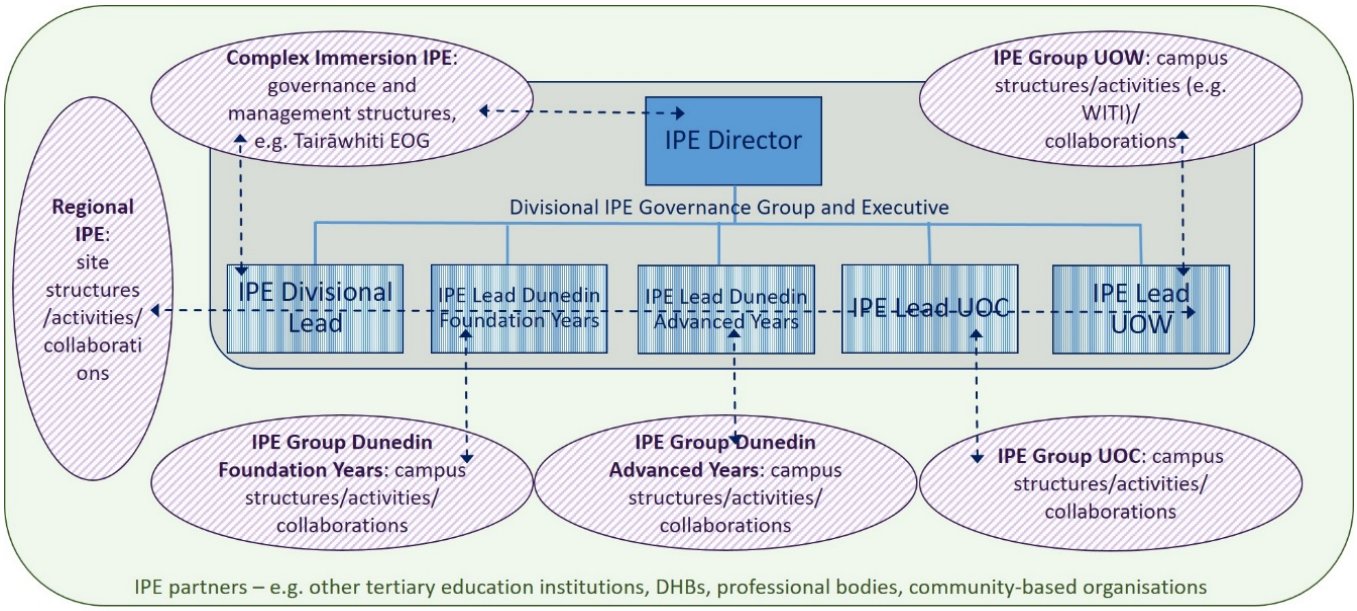

Figure 4: IPE linkages

3.3 Models for IPE development

The **IPE process model** (**Figure 5**)* has been developed to guide the process of policy- and decision-making in the context of multiple internal and external linkages.

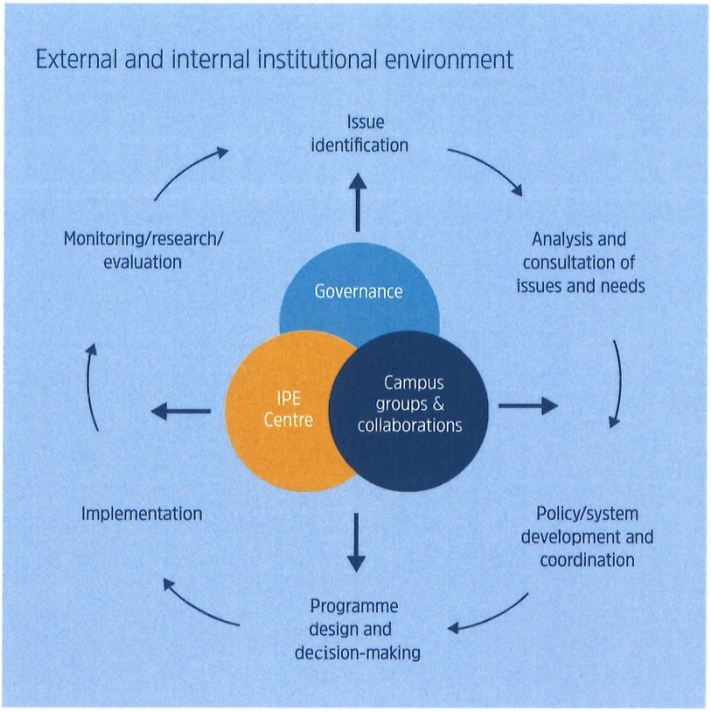

Figure 5: The IPE process model at Otago, 2018-2019

***** Model adapted and modified (Althaus, Bridgman, & Davis, 2013).

The IPE process model is intended to:

- Be clear, fair and workable for diverse constituencies, as represented on DIPEGG and engaged in campus-level structures
- Be flexible enough to incorporate a 'mixed' system of policy-driven, curriculum-shaping, curriculum-aligned, and evidence-based IPE activities
- Enable equity and voice for all constituents
- Support communication and conflict resolution
- Support iterative – including multi-site – implementation
- Be oriented to consolidation and continuous improvement.

The process model incorporates these key ideas:

- The development of policies, frameworks and guidelines can arise at different points (IPE governance structures, IPE Centre, IPE campus groups, existing and new IPE initiatives/activities/teaching teams/partnerships
- Wherever they arise, these ideas feed into a process of logical steps that ultimately supports selection of specific policies, frameworks or models, and their implementation, monitoring, evaluation and review

- This process flow allows Divisional IPE Governance to exercise strategic oversight and policy formulation roles as mandated by the Pro-Vice-Chancellor, including establishing linkages with Curriculum Committees and other key committees
- The process flow facilitates initiative or innovation at other levels
- The process flow facilitates formal evaluation/review of existing IPE activities
- The process of successive steps does not preclude different weighting of the steps in different cases – e.g. some issues may require extensive consultation, some less.

The **IPE conceptual model** (see **Figure 1**, Section 1.6.2) has been developed to guide and inform the substance of IPE policy, curriculum and delivery models across the Division.

3.4 IPE Centre achievements and work-in-progress

Outcomes to date demonstrate the effective exercise by DIPEGG and the IPE Centre of their roles (see **Table 6**, Section 9.3).

Nevertheless, the key strategic goal of progressively integrating IPE into the Health Sciences curriculum remains largely constrained by siloed and fragmented systems in respect of timetabling, clinical placements, eLearning platforms, workload modelling for academic staff (so that IPE teaching loads, and staff participation in IPE research and evaluation activities are accounted for), resourcing/funding and other areas.

As IPE progressively transforms into 'curriculum business as usual', the IPE Centre aims to be a centre of excellence, supporting all the health professional degree programmes, while also actively developing opportunities to partner in IPE activities with other tertiary education and/or clinical institutions to the benefit of Otago students and staff.

In its current configuration, the Centre offers a lean model for supporting achievement of IPE strategic objectives 2016-19, adopting a shared services approach across campuses and sites, consistent with Otago's Support Services Review. More precise future modelling of the Centre depends on factors including: the refreshing of Health Sciences Divisional strategic objectives from 2019, including to incorporate the IPE Quality Framework; and Divisional progress in achieving cross-Divisional systems alignment. Notwithstanding the dynamic environment, it is envisaged that the IPE Centre will continue as a discrete Divisional entity, for the purposes of coordination, standard-setting, quality frameworks, and ongoing professional development as well as collaborative research outputs.

4 Chapter 4: Development of an IPE curriculum

4.1 Rationale for a longitudinal IPE curriculum for Otago

It is increasingly recognised that for IPE learning activities to be of best value to pre-registration students in meeting achievement of IP competencies, these need to form together an integrated, robust pathway or programme of learning that steadily progresses developmentally over the course of their degree programme (Barr, Helme, & D'Avray, 2014). Further, even with the best of high-level mission statements and intentions, 'interprofessional education does not emerge naturally' (Cahn, 2014) p.128, but requires a formal institutional curricular model that is a permanent part of profession-specific degree programme curricula (S. King, Hall, McFarlane, & al., 2017).

There is also a need to develop frameworks for curricula that are theory-driven (Lee, Steketee, Rogers, & Moran, 2013), link more explicitly to health practice, and take more account of the contexts in which both education and health practice are located. Recent reforms for interprofessional education in Europe (Vyt, Pahor, & Tervaskanto-Macntausta, 2015) are moving in this direction. For example, the new curricular framework model at Linköping University in Sweden (Falk et al., 2015) - which extends Lee and colleagues' work (Lee et al., 2013) - incorporates four key dimensions:

- Identifying future health care and practice needs
- Defining and understanding capabilities
- Teaching, learning and assessment
- Supporting institutional delivery.

These dimensions, particularly the last, have much in common with issues we raised in Chapter 3 (see Sections 3.1, 3.2 and 3.3).

Curricular models based on sound theoretical principles are more likely to stand the test of time, and integrate more effectively with degree programme curricula, which in turn are theory-driven. They help in 'explaining, predicting, organizing or illuminating social processes embedded in IPE curricular assumptions' (Hean, Green, Anderson, & et al., 2018b) p.542. Many such theories have been proposed as consistent with IPE principles and values (Centre for the Advancement of Interprofessional Education (CAIPE), 2011) (www.caipe.org) – for example, adult learning, outcomes-based education, social capital, socio-material (Fenwick, 2010) and socio-cultural theories. However, Hean and colleagues agree there is no 'gold standard' and that most appropriate theory selection will continue to be curricular-context specific.

Sometimes referred to as a vertical, or longitudinal curriculum (Iversen et al., 2017), many variants of the exposure/engagement/immersion/competence continuum are described. One of the first was Charles and colleagues' model at the University of British Columbia (UBC), describing stages of exposure, immersion, and mastery (Charles, Bainbridge, & Gilbert, 2010). Some IPE curricula are described in terms of the setting or type of learning activity, but the principle of progression of learning over time is also articulated.

At Otago, we established the principle of learning progression in our IPE Strategy 2016-2019, (O'Brien et al., 2015). As our current suite of learning activities have emerged and consolidated, these have been 'mapped' on to an exposure-engagement-immersion continuum, adapted from the UBC model (Charles et al., 2010). For our purposes, we have defined and now refined three levels of learning defined as follows:

- Exposure – an IPE learning activity that meets the minimum requirements and is case-based or problem-based, but does not need to involve patients/clients either simulated or actual
- Engagement - an IPE learning activity that meets the minimum requirements and involves patients/clients either simulated or actual, but not in a clinical workplace where care is undertaken
- Immersion - an IPE learning activity that meets the minimum requirements and is based in a clinical workplace where students participate in usual care; the term 'complex immersion activity' has been used to denote an extended clinically-based rotation/block module.

Each IPE level has a place on the continuum of learning, with each being a necessary part of a vertical or spiral curriculum (Harden & Stamper, 1999) - from initial exposure in the early years of a degree programme, through to engagement-level learning activities, with immersion-level learning occurring in clinical workplaces.

This chapter considers various aspects relevant to a longitudinal IPE curriculum at Otago (partnerships and teaching/learning intersects). It goes on to summarise the current learning activities we now offer at Otago (across campuses and regional learning sites), including assessment methods, mapped to levels of learning, and identifying strengths and limitations of the whole. The crucial importance of faculty development, and of a range of IPE linkages, to support these learning activities, is discussed. The characteristics of several different types of IPE curricula are then outlined, using selected examples from Australia, North America and other places. Finally, suggestions are made for further developing and articulating a formalised IPE curriculum.

4.2 Current range of IPE learning activities at Otago

Interprofessional learning activities (in pre-registration programmes) have developed progressively at Otago since 2011. The first IPE activity was what has now become the INVOLVE (long-term conditions management) programme in Wellington, and others have been progressively added in different locations, and at different levels/complexity of learning, since 2012. The result is an impressive menu of learning opportunities, all of which meet the kinds of prerequisites that emerge as optimal for IPE learning activities (see e.g. Conclusion 11, Conclusion 17):

- Full involvement of two or more (preferably three or more) professions, staff and students
- At least one IP learning outcome, among others, explicit to students and staff at the outset
- Learning is predominantly interactive
- Explicit assessment of at least one IP competency domain.

For a listing of Otago's IPE activities up to 31 December 2018, see **Table 7**, Section 9.4.

Reviewing together all the learning activities now available at Otago, strengths and limitations of our current combination of learning activities are emerging: these need clear identification if we are to move forward.

The key strengths of the opportunities now available include:

- The wide range of different types of learning activities, in different locations, and in a range of community and hospital-based settings
- The very significant increase in the numbers of students across nearly all disciplines engaging in IPE learning activities
- The strong emphasis on evaluation and research that has strengthened the activities and knowledge, and awareness about IPE, across and beyond the entire Division of Health Sciences.

Pre-registration health professional students in the Division of Health Sciences are located in many places across New Zealand for all or part of their professional degree. The challenge of providing IPE learning activities in multiple locations has been considerable. Yet, this has also been a strength, as local champions have been able to utilise local opportunities to develop innovative learning. The IPE Centre has been able to establish a well-coordinated approach, with much sharing of expertise and resources.

The numbers of Otago health professional students engaged in one or more IPE learning activities at Otago* has increased from fewer than 30 students in 2011; to 1091 in 2017, 241 of whom engaged in more than one IPE activity in the same year; and increased again (by estimate as at 31 December 2018) to 1466 in 2018, with approx. 152 students engaging in more than one IPE programme in the same year. In 2018, 337 students from 11 partner institutions and 7 disciplines participated alongside Otago students in IPE; 220 of these were nursing students (in 2017, totals were: 8 partner institutions, 5 disciplines, 187 students, and 174 nursing students). This represents an enormous increase in activity, with the IPE Non Communicable Diseases Module** now introducing the majority of health professional students to formal IPE at the exposure-engagement level (650-700+ of Year 3 students across the Division, and Dietetics students enrolled in the first year of their health professional degree; from 2019 joined by approx. 180 nursing and occupational therapy students from the Otago Polytechnic). Other IPE learning activities cater for much smaller numbers but, collectively from 2019, increasing numbers of students will be progressing from the Module to a second (and third) learning activity at the engagement and/or immersion level(s) in their next stage(s) of study.

* These numbers are as at time of writing – i.e. 2019 student numbers are not included, as data for the 2019 year were not final/verified.

** IPE Non Communicable Diseases Module – so renamed in 2019, and referred to as such in this document throughout, to avoid confusion. (In 2017 and 2018, the activity was called the 'IPE Smoking Cessation Module'.)

Evaluation and research into IPE learning activities at Otago has accompanied this expansion, fostered by an interim contestable fund for developing innovation that has strongly encouraged the building of evaluation into new learning activities from the outset (Pullon, Darlow, et al., 2016). For example, the INVOLVE (long-term conditions management) learning activity in Wellington has been the subject of a descriptive study, a controlled trial, and student and teacher qualitative analyses, demonstrating effectiveness for dietetic, medical, physiotherapy, and radiation therapy students (Darlow et al., 2015; Darlow et al., 2016; Darlow et al., 2017; Pullon et al., 2013).

Notwithstanding these considerable successes, many challenges for the development and coordination of learning activities remain. The most significant problems are:

- The still extremely limited opportunity for IPE learning activities in clinical workplaces
- The need to strengthen and increase simulation-based IPE learning opportunities
- The need to further strengthen research into new curriculum development and new learning activity creation
- Workload allocation models for academic staff that do not yet optimally support IPE teaching and research
- The need for more professional development in the area of IPE facilitation and teaching for faculty and clinical staff
- The timetabling and scheduling difficulties resulting from persistent curricular misalignment, across programmes and also across campuses
- The ongoing need for adequate IPE administrative support across all campuses and sites.

Ideally, and in theory, there are many opportunities for IPE in clinical workplaces. Not uncommonly, students from different degree programmes are placed in the same ward or community clinic for varying lengths of time to gain clinical experience. However, bringing these students together to engage in a defined IPE learning activity occurs as yet unusually (exceptions are the INTERact programmes progressively established in Timaru, Nelson, Burwood Hospital in Christchurch, and Hawke's Bay; and the IPE Cancer Care activity in Palmerston North). It is clear that without additional educational support and training for clinicians who teach students in their clinical workplaces, learning activities in these settings will be difficult to set up and sustain. While serendipitous IPL (see page 34) may occur, and every opportunity should be taken to foster this within health professional teams (e.g. see the Hawke's Bay IPE programme being piloted in 2018), it will be of limited value without antecedent or accompanying formal IPE learning activities.

A notable exception to this situation for Otago is the Tairāwhiti IPE programme (learning activity), available to 70-80 students a year from Otago and partner institutions. This rurally-based model has been shown to be effective for senior students (Gallagher et al., 2015; McKinlay, Gallagher, Gray, Wilson, & Pullon, 2015; Pullon, Wilson, et al., 2016) and to have positive benefits for providers and the local community (Pelham, Skinner, McHugh, & Pullon, 2016) over several years. It could be

readily expanded and/or replicated if modest additional resource were available (the programme has been funded by Health Workforce New Zealand since 2012).

4.3 Staff development and recognition to support the range of IPE activities at Otago

Developing sufficient IPE facilitation and teaching expertise is essential if expansion and consolidation are to continue. The Wellington-based INVOLVE (long-term conditions management) programme has shown unequivocally the need for, and the benefits from, enculturating and upskilling academic and clinical staff. Yet this need continues to be under-resourced at Otago, necessitating specific just-in-time training sessions for specific learning activities, such as the IPE Non Communicable Diseases Module which in 2019 requires approx. 75 tutors in a two-month period across its two blocks in Semester 1.

As highlighted in Section 4.2 above, clinicians who teach students in their clinical workplaces also require educational support and training in IPE and IPCP, if learning activities in these settings are to be successfully established and sustained. Training in interprofessional teaching and learning skills, regardless of how extensive the training programme (smaller or larger), should be tailored also to allow recognition and value for Continuing Professional Development credit allocation in all health and social care discipline reaccreditation processes.

The IPE Centre is aware that a programmatic approach is needed for staff development across the continuum of IPE activities. Such a programmatic approach requires high-level Divisional/School/Faculty support. Recognition of staff workloads, and the additional time that development, set-up and coordination of IPE learning activities takes, need to be specifically built into departmental teaching expectations.

Currently, the IPE Centre is developing IPE staff development tools (e.g. online Clinical Educators Programme module), and hosts IPE staff development events from time to time across campuses (as well as the targeted training for specific IPE activities, as already mentioned). However, sustainable and effective solutions to the issues of IPE faculty development and IPE workload allocation/deployment of trained faculty, need to be found. As is the case with other elements of current curricular and system misalignment, these solutions need to proceed from decisions at institutional and governance levels, rather than at IPE learning activity level - as noted in Chapter 3 (see Section 3.4).

From a research perspective, there is also a clear and important need to find opportunities for staff to be able to access research funding, both internally and external to the university. Funding for educational research enquiry- particularly of the 'blue skies' variety - is limited in New Zealand; internal Committee for the Advancement of Learning and Teaching (CALT) grants (see https://www.otago.ac.nz/council/committees/committees/otago000942.html (accessed 25.10.2019), and Ako Aotearoa, the government-funded agency that leads New Zealand's tertiary sector in building educational capability for learner success (see https://www.otago.ac.nz/council/committees/committees/otago000942.html (accessed 25.10.2019), provide for small funding rounds only. International collaboration is already strong and growing – and joint international funding is an aspiration. A research programme able to foster Masters and PhD students to undertake original work in the IPCP and IPE fields is a longer-term goal.

4.4 The importance of cross-institutional partnerships

IPE at Otago is embedded in a matrix of internal and external linkages and partnerships that support collaborative health and social care professional education. Internally, these include IPE activities and collaborations across health professional programmes – including Dietetics in the Department of Human Nutrition/Faculty of Sciences – and across campuses and regional sites.

As IPE learning activities progress and expand towards meeting Health Sciences strategic objectives, they are increasingly developing beyond the Division and health professional programmes, to include other partner institutions and thus a varying range of disciplines. Externally, IPE activities and collaborations involve other tertiary education providers, District Health Boards (DHBs), professional bodies and community-based organisations. In some cases, specific Memoranda of Agreement (MOAs), and access agreements, are already in place to support an IPE activity; and others will be concluded over time.

These partnerships have important advantages for University of Otago students, notably providing them with opportunities to learn with health and social care professional students from other disciplines, and to gain clinical/workplace interprofessional learning experiences. In some situations, Otago accesses valuable and otherwise inaccessible resources (e.g. simulation laboratory facilities in other institutions) that benefit our students' learning.

Critically, cross-institutional partnerships support IPE's strategic purposes and ethos across the health and education systems, as these respond to the contemporary context and its imperatives (quality and safety, sustainability, efficiency) by renewing delivery models. IPE progressively develops students' collaborative practice competencies, culminating in opportunities to apply these in interprofessional teams of health and social care professionals, in clinical and community contexts. (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; Gilligan, Outram, & Levett-Jones, 2014; Weeks & Farmer, 2017)

4.5 Postgraduate learning: informing pre-registration IPE

Early experience with postgraduate (post-registration) interprofessional education at Otago (particularly at the Wellington campus) helped inform initial pre-registration IPE development. There are important similarities and differences to note when planning progression towards postgraduate education and workplace learning.

Similarities:

- IPE teacher teams include a range of disciplines and model respectful collaborative practice
- IPE classes include a range of disciplines with a reasonable balance of numbers
- Assessment is equal for all
- Class resources come from a range of perspectives/disciplines/authors
- Activities are intentionally interactive and are disciplinary-agnostic

- Language used is disciplinary-neutral.

Differences:

- Postgraduate students opt into IPE study knowing it is interprofessional. The majority value opportunities to critically analyse teamwork and collaboration as a subject in itself, because they recognise it to be necessary for quality patient/client care. This contrasts with most pre-registration students. They are challenged when asked to have a meaningful discussion purely about teamwork/collaborative practice and we have found this must be embedded within the topic of a particular facet of clinical care. Students with as-yet limited clinical experience tend to say they find the concepts/ideas nebulous and have limited illustrations to draw upon.

- In contrast to postgraduate IPE, some pre-registration students do not want to take part in IPE classes; they only want to study with their own discipline. Even studying with their own discipline, they still would not choose to talk about teamwork/collaboration, but would prioritise studying a clinical or skill topic. We accept that pre-registration IPE classes will initially include willing, disinterested and unwilling students.

- Postgraduate students are entirely knowledgeable about their role. This contrasts with pre-registration students who are still learning about their professional role. IPE pre-registration activities must focus on helping students to articulate roles and skills, and to talk about role differences.

4.6 Simulation-based education for IPE

Simulation-based education (SBE) is often closely related to interprofessional education, with IPE effectively utilising simulation techniques, and SBE intentionally incorporating interprofessional learning. Internationally, wide-ranging simulated learning activities have been used very successfully as core components of interprofessional education curricula, often at an intermediate stage between introductory learning components and clinical workplace learning (see Section 4.9.2.1; and **Table 8**). For example, at Griffiths University in QLD Australia, a majority of interprofessional education is simulation-based – see https://www.griffith.edu.au/griffith-health/learning-and-teaching/health-ideas/interprofessional-simulation-based-learning.

A simulation-based education report and strategy (Moore, 2016, 2018a, 2018b) have been developed at Otago Medical School in the last two years; the comprehensive report can usefully inform a Division-wide strategy and the use of SBE in a range of IPE learning activities. The definition of SBE expounded is:

> *Healthcare simulation is an instructional medium used for education, assessment, and research, which includes several modalities that have in common the reproduction of certain characteristics of clinical reality. Simulation-based educational activities rely on experiential learning, including feedback and reflection. As a fundamental requirement, they must allow participants to affect, to different degrees, the course of the educational experience through verbal or physical interaction with the simulated components, including simulated patients/clients*. (Adapted from Chiniara, Cole et al. 2013) (Chiniara et al., 2013).

Of particular note is the firm inclusion of the use of "simulated patients/clients" as well as other simulated components such as manikin-based SBE, and "verbal and physical interaction with the simulated components", which - in the case of IPE - also includes peer-peer (student-student; staff-staff) interactions, communication and effective interprofessional team functioning. Furthermore, key defining features of SBE design are wholly consistent with good IPE design and delivery:

- Actual physical, active experience and participation
- Interaction that influences the experience and the education/learning outcome
- Feedback and reflection.

Just as for IPE, SBE must be of high quality to be effective and safe for students, staff and simulated patients/clients. Integration within curricula, in contrast to isolated learning activities disconnected from other learning, is necessary for best value in learning. In this and other respects, SBE as an integral part of the IPE learning activities and curriculum proposed earlier, has the potential to utilise benefits in both directions.

> *A good understanding of [educational principles and necessary teaching skills] means SBE can be both efficient and effective, and delivered to high standards without necessarily always requiring high-cost facilities and equipment. SBE is most effective when it has clear and defined purpose (objectives) and is integrated within the overall curriculum. (Moore, 2018b) p.4*

The synergies are such, that IPE and SBE could be more formally linked and integrated, while also recognising that SBE and IPE can be closely related but are not the same.

4.7 Rural settings for IPE

As part of active and ongoing partnerships within the Division of Health Sciences, one of the strategies is to produce a health workforce equipped to meet the needs of society and, in doing so, 'ensur[e] that health professional students both mirror the rural/urban composition of Aotearoa New Zealand, [and] are responsive to the specific health needs of rural communities' (University of Otago, 2015) p.8. The Division's focus on rural health is underpinned by the principles of social accountability, community and iwi engagement, as well as interprofessional learning.

The Rural Health Interprofessional Immersion Programmes (RHIIPs) already established in New Zealand - such as the Tairāwhiti Interprofessional Education programme (TIPE) in Tairāwhiti and Wairoa, led by the University of Otago, and the Rural Health Immersion (RHIP) programme in Whakatane, led by the University of Auckland - are examples of undergraduate interprofessional learning occurring in partnership with local communities. Proposals for a National School of Rural Health (NSRH), or some comprehensive variant, have been made in 2017 and again in 2018 to the Ministry of Health by the University of Otago and the University of Auckland, to build on these successes and to offer health professional students both longitudinal, integrated clerkship placements and rural-immersion, clinical-experience rotational placements.

IPE is the basis of the teaching and learning model proposed for rural health, as this approach ensures that all health professional students learn about, from and with each other. As IPE involves sharing teaching staff and infrastructure at the local level, it is also the most efficient and sustainable model of health professional education in rural communities. Social accountability and quality and safety frameworks are integral to the model, as these are highly consistent with, and build on, interprofessional principles, processes and values (Gallagher et al., 2015). Further, IPE is the internationally-accepted way to educate collaborative-ready practitioners who are able to rapidly engage in interprofessional, collaborative, integrated practice. Enhanced learning from vertical and horizontal integration will enable greater understanding of skills/roles of other health disciplines, and the early introduction of the need to adopt a team approach to health management. Collaborative practice is particularly necessary, and successful, when managing people with complex and/or multiple, long-term conditions, who are often further disadvantaged by low socioeconomic status (Ministry of Health, 2016). Rural New Zealand has a high proportion of such populations, in particular Māori. Research has shown:

- Positive benefits from clinically-based education programmes extend to clinical providers, their practices and to their largely rural community with a high Māori population
- Clinical providers recognised benefits resulting directly from the students' contributions to patients/clients, or from the community projects; and in particular the ongoing benefits and positive outcomes for the community that providers of IPE have also recognised
- If students are well supported, rural settings offering interprofessional learning/collaboration are highly suitable for indigenous/Māori health learning
- Students participating in an IPE programme, in a rural location with a high indigenous population, can successfully achieve their academic outcomes while also engaging in a socially accountable activity.
- There is also an ongoing need to evaluate health professional education in rural settings (pre- and post-registration), and undertake much needed research into the health of rural communities, their health workforces, and the interplay between workplace training, service provision, and community engagement and impact.

  (Pullon, Wilson, et al., 2016)

4.8 Key outcomes as a result of IPE

The IPE conceptual model (see **Figure 1**, Section 1.6.2) envisages a range of contextual drivers and milieus for IPE, including: Treaty of Waitangi, reducing inequity, NZ health system and population priorities. In addition, critical outcome themes need to run horizontally and longitudinally through all IPE teaching and learning in order to develop students' capability for interprofessional practice:

- **Cultural competence** (student capability achieved through linkages between Hauora Māori / Pacific Health / IPE at the level of IPE activity development and design. At the programmatic level, linkages are important in the Health Sciences Division between Hauora Māori / Pacific

Health / IPE strategic and curriculum development goals, and processes towards their achievement)

- **Social accountability** (student capability developed through an IPE model oriented around person-centred care)
- **Collaborative practice** (student capability developed through IPE learning objectives, outcomes and competencies)
- **Quality and safety** (student capability developed though a continuous highlighting and demonstration through IPE activities of the tight relationship between collaborative practice and quality and safety, while also recognising that they are related but separate concepts; this is an area of current discussion for professional and interprofessional curriculum development at Otago). Given that the third part of the definition of IPE is "to improve the quality of care and services", then, wherever appropriate, quality and safety of care should be emphasised as a core and necessary outcome of collaborative practice, and therefore be incorporated into IPE learning activities (Personal communication, Emeritus Professor John Gilbert, 09.04.2019).

4.9 An integrated, robust programme of learning

It is obvious that, although we now have at Otago an impressive collection and selection of learning activities that map well to discrete levels of learning, further work is needed to develop an articulated, explicit IPE curriculum that aligns with our now well-developed conceptual model (see **Figure 1** in Chapter 1).

The overarching intended learning outcomes for the IPE curriculum are:

- To show evidence of ability to work effectively and safely within an interprofessional healthcare team, to provide optimal person-centred care (adapted from the 2008 University of Sydney statement)
- To be able to undertake interprofessional collaborative practice
- To place interprofessional practice competencies/capabilities in multiple contexts – with specific reference to New Zealand society and obligations under the Treaty of Waitangi, cultural competence, social accountability, sustainable and equitable health and social care systems, quality and safety, and person-centred practice.

4.9.1 IPE core competency domains

Sets of interprofessional competencies, arranged into **core competency domains**, need to serve as the foundation of the overarching longitudinal IPE curriculum. Flexibility will be required to enable different learning activities to best match IP competencies to the design and any assessment of the learning activity, so that IP competencies can be expressed as specific learning outcomes.

In practice, IP learning outcomes will often sit alongside, or be interleaved with, specific topic learning outcomes, enabling multiple, related learning objectives to be met concurrently (also see discussion under Section 5.3, and see **Table 1**).

The six IPE core competency domains for IPE at Otago comprise:

- **Interprofessional communication**
- **Role clarification and appreciation**
- **Reflective practice, incorporating interprofessional principles, values, ethics**
- **Teamwork and team functioning, including conflict negotiation and resolution**
- **Collaborative leadership and followership***
- **Interprofessional coordination and shared decision-making.**

Within each domain, the specific competencies can be considered as learning objectives (what a programme hopes students will achieve), expressed as specific intended learning outcomes (ILOs: statements of what the individual is expected to know, understand, and is able to do, on completion of a learning process).

* Followership is 'the ability to take direction well, to get in line behind a program, to be part of a team and to deliver on what is expected of you' (McCallum, 2013).

4.9.2 Standard-setting and educational equivalence

Part of the solution lies in also working at an institutional level to introduce standard-setting and educational equivalence (see Chapter 6).

4.9.2.1 Characteristics of some IPE curricula

In reviewing the key characteristics of a number of more developed IPE curricula, at other tertiary institutions, some commonalities emerge.

For selected examples see **Table 8**, Section 9.5.

Other institutions have adopted arrangements that are not necessarily so clear-cut in progression, sometimes in response to the need to take opportunities for learning when they arise. However, there is generally an expectation of cumulative learning and often some kind of registration of a menu of learning activities that students can participate in. For example, Texas Tech (http://www.ttuhsc.edu/interprofessional-education/default.aspx) has an online approval system for IPE learning activities which, once approved, and once successfully completed by students, ensure a certain amount of learning credit for students. On the other hand, UBC

(https://passport.health.ubc.ca/) now has an IPE passport system, which is managed by students on an individual basis through an online portal, with the students taking responsibility for completing some practice-based activities.

4.10 Conclusions for an IPE curriculum at Otago

Conclusion 2: A formal, agreed quality framework

A framework that clearly articulates an agreed, common IPE curriculum across degree programmes is critical, given Otago's number of health professional degree programmes and the consequent complex matrix of professional and student expectations, regulatory requirements, societal contexts, community expectations, varying lengths of programmes, and the historic programmatic structures.

Conclusion 3: Defined IPE curriculum

For the purposes of quality in IPE, there would be value in developing a clearly defined Otago IPE curriculum for the Division of Health Sciences: agreed from the outset across the health professional degree programmes; and wholly consistent with the University and Division of Health Sciences Māori and Pacific strategic plans.

Conclusion 4: Adaptive IPE curriculum

Such a curriculum would optimally be suitable for concurrent or later inclusion of, and by, other degree programmes within the university, or at other tertiary institutions if desired.

Conclusion 5: IPE staff development as quality criterion

Developing sufficient IPE facilitation and teaching expertise is essential if expansion and consolidation of an IPE curriculum in the health sciences programmes are to be achieved. The need for educational support and training in IPE and IPCP also extends to clinicians who teach students in their clinical workplaces.

Conclusion 6: IPE staff development as programmatic approach

A programmatic approach is needed for staff development across the continuum of IPE activities. Such a programmatic approach requires high-level Divisional/School/Faculty support for sustainable and effective solutions to the issues of IPE faculty development and IPE workload allocation/deployment of trained faculty.

Conclusion 7: Responsive IPE curriculum

The design and implementation of a longitudinal IPE curriculum at Otago needs to take into account the range of partnerships and teaching/learning intersects that support collaborative health and social care professional education, as well as critical outcome themes running through all IPE teaching and learning (e.g. cultural competence, social accountability, collaborative practice, and quality and safety).

Conclusion 8: Components of IPE curriculum

An Otago IPE curriculum as a whole would, for example, describe: overarching aims, a set of curricular-level learning outcomes, a sequence of selected learning activities, and expectations for students, collectively and individually.

The overarching intended learning outcomes for the IPE curriculum are:

- To show evidence of ability to work effectively and safely within an interprofessional healthcare team, to provide optimal person-centred care)
- To be able to undertake interprofessional collaborative practice
- To place interprofessional practice competencies/capabilities in multiple contexts – with specific reference to New Zealand society and obligations under the Treaty of Waitangi, cultural competence, social accountability, sustainable and equitable health and social care systems, quality and safety, and person-centred practice.

Conclusion 9: IPE core competency domains

Sets of specific interprofessional competencies, arranged into core competency domains, will be the essential foundation of the overarching longitudinal IPE curriculum. The six IPE core competency domains at Otago will comprise:

- Interprofessional communication
- Role clarification and appreciation
- Reflective practice, incorporating interprofessional principles, values, ethics
- Teamwork and team functioning, including conflict negotiation and resolution
- Collaborative leadership and followership
- Interprofessional coordination and shared decision-making.

Within each domain, the specific competencies can be considered as learning objectives (what a programme hopes students will achieve), expressed as specific intended learning outcomes (ILOs: statements of what the individual is expected to know, understand, and is able to do, on completion of a learning process).

Conclusion 10: Timing and sequence of IPE learning activities

A defined, adaptive and responsive longitudinal IPE curriculum, delivering a defined set of overarching IP competency domains, would optimally be:

- Introduced early in health professional programmes (e.g. by Year 2)
- Progressive in intended learning outcomes over the course of study
- Mandatory for all participating students
- Integrated as part of the overall course of study
- Assessed appropriately with demonstration of the intended IP competencies required.

Conclusion 11: Characteristics of interprofessional learning activities

1. Include students from at least two, and preferably three, health professions, who participate as 'near-equals' in the activity (for example, this could include senior pre-registration students and junior post-registration students)
2. Involve teachers from different professions who are actively involved in development, delivery and assessment
3. Include time for reflection and debriefing
4. Integrate fully into the degree course by e.g. occurring within normal student workload expectation and within usual timetable/usual hours of work
5. Be required for all participating students (or, if an elective situation, once chosen, students would be fully committed and complete the course).
6. Have clearly stated interprofessional learning outcomes which are explicit and communicated to students from the outset
7. Concentrate on interactive, not didactic, learning
8. Include expectation of reflection and debriefing
9. Link closely to practice and be as authentic as possible (e.g. case-based learning, high-quality simulation, IP clinical placements)

10. Incorporate summative assessment in the same way for all students, including for the demonstration of IP competencies

11. Integrate fully into the degree course by e.g. explicitly linking with relevant degree programme course objectives, dovetailing with relevant degree programme curriculum topics and content, and incorporating summative assessment.

Conclusion 12: Criteria for interprofessional learning outcomes: clinical placements

By the completion of their IPE placement, as adapted from Curtin University guidelines (Brewer & Barr, 2016), students would be able to e.g.:

1. Describe their own professional knowledge, skills, attitudes and values; and limitations relevant to these
2. Describe the contribution of other professions to health service/care
3. Demonstrate effective communication with patients/clients, whānau/family, students, health professionals and relevant staff, to ensure safe, high-quality service/care
4. Work in partnership with the patient/client and other professionals to plan, implement and evaluate evidence-based service/care, including referring on as appropriate
5. Facilitate effective team interactions, manage conflict and provide leadership when appropriate
6. Evaluate the outcomes of interprofessional team collaborations, their own contribution to these, and suggest improvements
7. Describe and situate their professional and interprofessional approach to health service/care in relation to quality and safety, ethics and accountability, culture and equity.

5 Chapter 5: Assessment of student learning

5.1 A rationale for assessment in IPE

There are several compelling reasons for building assessment into well-aligned (Biggs & Tang, 2007) learning activities in health professional education, whether at pre-registration or post-registration level. A recent comprehensive international consensus statement about assessment of interprofessional learning activities, and indeed whole curricula, provides a clear rationale, with suggestions for the sensible use of assessment tools at the present time (Rogers et al., 2017). This chapter extensively draws on, and also extends, the key findings in the seminal consensus statement.

At the outset we distinguish between the aims of assessment (for individual students, or groups of students, in meeting defined, achievable learning outcomes) and those of shorter- and longer-term evaluation (of IPE learning activities per se, of IPE curricula, and of ultimate effect on clinical practice and patient/client care).

> *Evaluation is about the quality of what is done or delivered, while assessment focuses on what is learnt by those undertaking the intervention. Assessment is however one component of an evaluation – the evaluation of learning.* (Thistlethwaite, Kumar, Moran, Saunders, & Carr, 2015) pp.292-3

Confusion has arisen in part because the terms 'assessment' and 'evaluation' are sometimes used differently and interchangeably in the United States, without further qualification; however, for clarity, we have chosen here to use the distinction as made above, throughout this report.

5.2 Why assess

> *Linking educational activities to measurable improvements in IPE competencies that reflect the real world of team-based care is essential.* (Brashers et al., 2016) p.448

Multiple reasons for assessment and evaluation in health professional degree programmes exist and are well known (Biggs & Tang, 2007; Curran, Sharpe, & Forristall, 2007). Assessment can act as a powerful guide to student learning, and inform progression decisions over the course of a degree programme. Particularly for IP assessment at programmatic level, Dow and colleagues (Dow, DiazGranados, Mazmanian, & Retchin, 2014) describe as paramount: the need to reliably inform curriculum planning; the ability to track student progress over the course of a degree programme (usually several years); and the ability to compare programmatic outcomes within and between institutions. In line with the assessment/evaluation distinction drawn above (Section 5.1), the first and third of these reasons are discussed in more detail in Chapter 7, on the subject of evaluation.

The international consensus statement on IPE assessment (Rogers et al., 2017) supports the assessment of defined IP competencies or capabilities, using principles of competency-based education. Although there is recognition of some of the shortcomings of such an approach as potentially 'reductionist', the achievement of a well-defined competency includes cognitive, psychomotor and performance elements. Almost by definition, most IP competencies also have

social elements, and their use is supported (Rogers et al., 2017). Furthermore, use of a competency-based assessment system aligns well with the widely-accepted constructivist approach to education, where there is intentional tight alignment between teaching and learning activities, outcomes and assessment (Thistlethwaite & The iTOFT Consortium, 2015).

The concept of entrustable professional activities (EPAs)* has also been developed to assess workplace performance and assist supervisors to assess the degree to which supervision is required at advanced training levels (ten Cate, 2005, 2013a). These also show promise for assessing pre-registration students and EPAs have been developed with facets of teamwork in mind (Yee, 2017); although, with respect to interprofessional competencies, this work is still in development (Wagner & Reeves, 2015).

> **EPAs are units of professional practice, defined as tasks or responsibilities to be entrusted to the unsupervised execution by a trainee once he or she has attained sufficient specific competence. EPAs are independently executable, observable, and measurable in their process and outcome, and therefore, suitable for entrustment decisions.* (ten Cate, 2013b) p.157

5.3 What to assess

Within the constructivist-learning-theory, outcomes-based educational model now used by many health professional degree programmes, meaningful assessment of interprofessional attributes requires close attention to the intended learning outcomes for interprofessional education. Several frameworks defining agreed core competencies for interprofessional practice (the overarching intent for all interprofessional education) are well-known. The term 'capability' rather than 'competency' is used in some of these, to denote a more practice-ready term/frame of reference (Brewer & Jones, 2013). (See also 'competency' definitions, Section 2.5).

Thistlethwaite and colleagues (Thistlethwaite et al., 2014) have provided a critical review and comparison of four key frameworks from the UK (CUIPLU Combined Universities Interprofessional Learning Unit UK, 2010), Canada (CIHC Canadian Interprofessional Health Collaborative, 2010), the United States (IPEC Interprofessional Education Collaborative, 2016) and Curtin University, Australia (Brewer & Jones, 2013).

The Canadian framework in particular has had a prominent role in informing our own Otago process and concept models to date. All four frameworks have devised six to eight key domains, each including a number of specific competencies. There is considerable congruence across the key domains, despite originating in different countries with different health systems. While the principles of interprofessional practice clearly transcend national boundaries, these dominant frameworks have partially developed in concert: the IPEC framework - especially the original 2011 version - drew explicitly from the CIHC and CUIPLU frameworks, and the Curtin framework was informed by all three for the Western Australian context.

Of note at Linköping University – one of the pioneering IPE institutions – the IPEC framework has now been adopted, but with one additional key domain: that of Pedagogy in Teaching and Learning (Falk et al., 2015).

Taking this synthesis of key frameworks into account, the international consensus statement on IPE assessment (Rogers et al., 2017) endorses six key learning outcome domains for competency-based assessment. These are: Role understanding; Interprofessional communication; Interprofessional values; Co-ordination, and collaborative decision-making; Reflexivity; and Teamwork.

These broad areas line up well with areas we are already identifying as our Otago core competency domains and in our learning outcomes. These in turn guide IP assessment and, in some cases, are already assessed using either our own, or others' recognised tools. The domain areas relating to Values and Reflexivity above are, however, not well captured in the Canadian framework - nor in our own earlier materials - despite well-substantiated rationale internationally.

On the other hand, these agreed domains give no explicit acknowledgement, at least at the domain level, of important related contextual concepts, such as cultural competence, social accountability, quality and safety, and person-centred care, where interprofessional attributes might be integral to the learning outcomes for some IP learning activities. Other authors have emphasised the need to take the context of interprofessional evaluation into account (Fox & Reeves, 2015; Oates & Davidson, 2016; Wong et al., 2012).

Consequently, the key IP competency domains introduced in Chapter 4 also specifically acknowledge concepts central to our thinking in NZ. The development of the Otago conceptual model (see **Figure 1**), has formed the basis for this process, and will adjust to reflect the agreed IP core competency domains. The discussion of core competency domains in Section 4.9.1, is recapped here for convenience.

The six IPE core competency domains at Otago comprise:

- **Interprofessional communication**
- **Role clarification and appreciation**
- **Reflective practice, incorporating interprofessional principles, values, ethics**
- **Teamwork and team functioning, including conflict negotiation and resolution**
- **Collaborative leadership and followership**
- **Interprofessional coordination and shared decision-making.**

Within each domain (or high-level learning outcome (LO)), a set of IP competencies are expressed as specific intended learning outcomes (ILOs).

(An interprofessional learning outcome is the acquisition of knowledge, skills or attitudes where IPE adds value to the learning experience because of the interaction between participants, and which facilitates the achievement of interprofessional competencies (or a set of interrelated competencies such as communication, teamwork, and collaborative practice skills) (Thistlethwaite & Moran, 2010)).

The six competency domains are overarching constructs (i.e. high-level learning outcomes - some argue more appropriately called capabilities) that each identify a cluster of more specific interprofessional competencies that are conceptually linked (see Section 2.5). The specific competencies can be considered as learning objectives (what a programme hopes students will achieve), expressed as more specific intended learning outcomes (ILOs: statements of what the individual is expected to know, understand, and is able to do, on completion of the learning process).

Within each domain, these statements may vary somewhat in their language, depending on the particular learning activity, but typically a domain will incorporate two or more specific IP competencies, which can be expressed as ILOs, and assessed as such.

Some examples of specific competencies/learning objectives, expressed as intended learning outcomes (ILOs), and arranged within each IP core competency domain are given here, based on examples drawing from a) Thistlethwaite and Moran's work (Thistlethwaite & Moran, 2010), and b) the Otago Medical School (OMS) current MBChB Curriculum Map professional practice domain.

These are not intended to be prescriptive, nor are they the only relevant examples. Each teaching team developing a learning activity may well wish to draw appropriate phrases from other sources; this is an important part of the cross-disciplinary agreement process.

Table 1: IPE core competency domains, with examples of possible specific intended learning outcomes (ILOs)

Domain (high-level learning outcome (LO))	Examples of possible specific intended learning outcomes (ILOs)
Domain 1 Interprofessional communication	Effective communication (safe, open and respectful) with/between health professional students and practitioners across a range of disciplines
	Effective personal and interpersonal communication strategies and processes within interprofessional teams
	Effective communication strategies in teams in relation to the acceptability, quality and safety of clinical and professional outcomes
Domain 2 Role clarification and appreciation	Well-developed concepts of role and professional identity; their relevance to practice and interdependence in interprofessional collaborative practice
	Articulation of one's own role/scope of practice in relation to other health professional roles and scopes of practice, including recognising when to consult with, refer and/or fully collaborate with other health care professionals
	Communication about own and others' roles in appropriate, professionally respectful language to other health professionals and to patients/clients/families/whānau/communities
	Communication about own and others' roles in culturally respectful ways to other health professionals and to patients/clients/families/whānau/communities
Domain 3	Work together in the best interests of the patient: quality and safety of care
	Work together in the best interests of the whānau and wider community: social accountability
	Identification of common professional interests through reflection
	Identification of structural and/or bureaucratic barriers to, or facilitators for, interprofessional collaborative practice (IPCP)

Domain (high-level learning outcome (LO))	Examples of possible specific intended learning outcomes (ILOs)
Reflective practice, incorporating interprofessional principles, values, ethics	Identification of ways to minimise/eliminate barriers to IPCP, and to facilitate IPCP
	Identification of ways to positively influence team dynamics
	Identification of own learning needs in relation to teamwork
	Ability to identify and reflect critically on own perspectives in relation to a team
Domain 4 Team functioning, including conflict negotiation and resolution	Knowledge of and skills for teamwork, principles and the importance of common goals
	Effective strategies to facilitate the co-contributions, roles, expertise and interdependencies of all health care team members in collaborative, person-centred care
	Strategies to facilitate mutual respect, understanding and support for all health professionals involved in patient/client care delivery
	Conversational mechanisms to repair conversations
	General strategies for building and improving communication and constructive working relationships between interprofessional team members in the dynamic workplace context
	Responsiveness to differences of opinion within an interprofessional team, in the interests of potential positive outcomes
	Skills in assertively articulating when something is not right, or an error is likely to occur
	Actively engaging self and others, including patient/client/family/whānau, in positively and constructively addressing disagreements as they arise
Domain 5 Collaborative leadership and followership	Demonstrates knowledge and practice of functions of leadership and followership in interprofessional teams
	Demonstrates knowledge of models of leadership and followership for members of diverse interprofessional health and social care teams
	Demonstrates knowledge of the function and role of a team member; determinants of effective membership of interprofessional teams
Domain 6 Interprofessional coordination and shared decision-making	Knows about different types and levels of communication required in different situations
	Exchange of essential clinical information (health records, through electronic media)
	Awareness of difference in health and social care professionals' language
	Ability to collaborate to reach a shared decision in relation to patient care, and when and where this is appropriate

5.4 How to assess

To date, various aspects of interprofessional education have been assessed utilising learning activities that include team-based projects, group presentations, reflective writing and/or portfolio compilation, and informal observation of simulation and observation of practice. Recording of such assessment has ranged from informal discussion, to various forms of unstructured or semi-structured written templates. Assessment of IP competencies is likely to require multiple methods of assessment. (Rogers et al., 2017)

Of all the IP competency domains in practice, methods for the assessment of teamwork have been better explored than for most others (Shoemaker et al., 2016). When teams do not function well in clinical practice settings, poor results come to light, either over time, or more immediately, particularly in acute care situations; hence much attention has been focused on assessment of team functioning. Other IP competency domains have received less attention. Nevertheless, the development of validated and reliable tools suitable for use in individual and group workplace assessment of teamwork per se, continues to be challenging. The Atlas of Instruments to Measure Team-based Primary Care, developed by Shoemaker and colleagues as above, is a readily accessible database of tools in current use (Agency for Health Care Research & Quality, 2016).

The majority of these collect individual self-report data, such as the well-known AITCS (Assessment of Interprofessional Team Collaboration Scale) (Orchard, King, Khalili, & Bezzina, 2012). There are very few tools that incorporate observation of individual behaviour within a group or team, either in workplace settings (Shoemaker et al., 2016), or for pre-registration students. As the international consensus statement says:

> *…tools developed to assess the performance of established teams are unlikely to be suitable for the assessment of teams comprised of pre-registration health professional students.* (Rogers et al., 2017) p.354

It is generally agreed that self-report data is not suitable for summative assessment of students (Oates 2014), nor for most formative assessment, although these data may have a place in self-assessment such as portfolio reflection in some situations (Rogers et al., 2017).

Attempts have therefore been made to develop observational tools suitable for use with students when assessing their work in teams or groups. Few objective validated tools exist (Reeves, Boet et al 2015). The small number of observational tools available are still in various stages of development. At this stage, the international consensus recommends assessing individuals for their team skills, rather than assessing the group as a team (see Section 5.4.3). However, this is not ideal, and tools are also clearly needed that will accurately and fairly assess a group for their performance as a whole (as that is the required outcome for patient/client care teams). Three observational tools for assessing pre-registration students are considered below; the tool developed most recently is also the most comprehensively reported.

The ICAR assessment rubric (Curran et al., 2011) has been used successfully for several years at Memorial University, and notably includes a range of IP competency areas as well as teamwork, but has proved complex to administer and not easily appropriate for one-off assessment situations. It appears to be best suited to a clinically-based extended work experience attachment, where the observer has had extended opportunity to observe teamwork and other interprofessional behaviours over time. Providing multiple opportunities to assess performance over time through a variety of methods has considerable merit; logistics and feasibility are likely limitations.

The T-OSCE (iOSCE) assessment tool (also known as the McMaster-Ottawa T-OSCE) has evolved over time, and was based on experience with Objective Structured Clinical Examinations (OSCEs), the extensive OSCE literature, and other previous studies. The T-OSCE (Team-OSCE) was originally designed for use in a one-off teamwork assessment situation (Symonds, Cullen, & Fraser, 2003),

where a group of students are brought together for the first - and often only – time, to participate in a directly observed team or group patient-/client-based assessment.

The T-OSCE has been shown to be acceptable and feasible, and reliable and valid, as a formative assessment tool for pre-registration medical and other students in palliative care settings (Hall, Marshall, Weaver, Boyle, & Taniguchi, 2011; Solomon et al., 2011). Other suitable topic areas for its use as an assessment tool include complex chronic disease management, care of the elderly, patient/client safety and ethics (Simmons et al., 2011). There has been some criticism that groups brought together in this way are unlikely to perform well, as teams often develop over time (Oakley, Felder, Brent, & Elhajj, 2004), yet patient/client care teams may be formed in just this way in acute clinical situations such as a cardiac arrest, or in a palliative care assessment (Hall et al., 2011).

Importantly, the T-OSCE has proved successful in assessing palliative and end-of-life care competencies and interprofessional competencies in the same integrated process, where the combination of competencies enables students to demonstrate interprofessional capability as integral to practice. Students were assessed both as individuals, and as a team (see Section 5.4.3). Feedback and debrief with the student teams proved important; as did the development of scenarios applicable to the interprofessional mix of the student groups (Hall et al., 2011).

The T-OSCE has been further developed into the interprofessional teamwork objective structured clinical examinations (as the ITOSCE) by Brashers, Owen et al., in Virginia; along with the associated Collaborative Behaviors Observational Assessment Tools (CBOATs), for use in observation of simulated learning activities. The CBOATS is a checklist of both profession-specific and interprofessional competencies, adapted in each case to a specific learning activity. Of note is the development of a different CBOAT scale for medical and nursing students, with the observations made by the standardised patients/clients, as well as self-rating by students.

Most recently, and taking the more problematic aspects identified with earlier tools into account, the iTOFT has been developed by an Australian-led international team, specifically for use to assess teamwork with pre-registration health professional students. The associated final report provides a comprehensive review in Chapter 4 of tool development for the assessment of teamwork in health professional practice (Thistlethwaite & The iTOFT Consortium, 2015).

There are a number of key principles that the authors reiterate in their report:

- Assessment of teamwork should involve direct observation of students performing or working in teams (including while doing the work of learning)
- Assessment of interprofessional skills is wider than observation of teamwork per se
- When learners are involved from more than one professional programme, the learning outcomes (whether interprofessional learning outcomes or topic-related learning outcomes) should be the same for all.

Following a comprehensive literature search, a consultative Delphi process and field trials were undertaken of a tool originally known as iStat. Extensive changes were made as a result of the field trials, resulting in the iTOFT in two versions (Thistlethwaite & The iTOFT Consortium, 2015). The

Basic version is for use with more junior students in classroom or tutorial situations, with the Advanced version available for use in clinically-based work experience contexts for more senior students (Thistlethwaite et al., 2016). The Basic version assesses two domains: shared decision-making and working in teams; the Advanced version assesses four domains: shared decision-making, working in teams, leadership and patient/client safety. (For both the iTOFT assessment tools, see Section 9.6.)

Although as yet advocated only for use as a feedback and formative assessment tool, the iTOFT holds promise as a tool that may prove to be suitable for wider use, including 'in-practice' summative assessment.

5.4.1 Assessment of students at clinical workplace placements

Some have argued that assessment of students while working in clinical workplaces is the most authentic and meaningful place to assess teamwork and other IP competencies. Yet intentional interprofessional clinical placements, where students of two or more health professions (at near-equivalent stages of learning) are actively learning together as they are involved in aspects of patient/client care, remain uncommon. Near-equivalent stages of learning might include for example: students at senior pre-registration stages and junior post-registration stages, or pre-registration students from a range of programmes of varying duration but all about to graduate, where there is common learning ground and no great power imbalance between learners.

Some assessments are conducted of individual student participation in health care teams, working with experienced health professionals. The Mini Clinical Evaluation Exercise (Mini-CEX) and Direct Observation of Procedural Skills (DOPS) (Lorwald et al., 2018), originally developed for junior health professionals, are good examples where student attitudes towards staff are taken into account. While this type of assessment is undoubtedly useful for the purposes of robust assessment of profession-specific competency development and progression, assessment of students from different professions learning together is what concerns us here.

Some of the tools already described above have specific but not exclusive applicability in clinical settings, particularly the ICAR (Curran et al., 2011). The advanced version of the iTOFT may also lend itself to such use.

As part of their interprofessional capability framework, Brewer and colleagues have developed student and facilitator assessment tools, the former including explicit elements of student reflection (Brewer & Jones, 2013).

5.4.2 Assessment over the course of a programme (programmatic assessment of IP competencies)

Rogers and colleagues (2016) acknowledge in their consensus statement the importance of developing assessment of IP competencies over the course of a programme or IPE curriculum:

> *This requires a learning trajectory with early theoretical learning, as well as learning activities – simulated or clinical – where team working and collaborative practice can be observed, practised, and potentially assessed* (Anderson, Smith, & Hammick, 2015; Rogers et al., 2017) p.351

Points of consensus about this broader assessment:

- Formative and summative assessment should be critical elements within a programmatic approach to interprofessional education, where appropriate assessments are utilised to promote learning and to measure learning outcomes of increasing complexity across programmes
- The availability of a range of appropriate IPL opportunities is a critical prerequisite to the fair assessment of interprofessional capabilities
- Appropriate developmental opportunities for educators and assessors are a requirement inherent in the effective implementation of interprofessional assessment processes.

Of the tools above, the ICAR (Curran et al., 2011) is best suited to repeated use over time, but more so in clinical situations. Use of more than one tool over the course of a programmatic assessment is not only acceptable but likely to strengthen the assessment over time.

Dow et al (Dow et al., 2014) produced the Interprofessional Education Collaborative (IPEC) Competency Self-Assessment questionnaire, mirroring all the IPEC framework domain competencies, with a view to this being used (in addition to other tools) for individual student assessment across the course of a progressive IPE curriculum. Although self-report, this has potential for repeated administering over the course of an IPE curriculum to assess individual student learning progression and, combined with assessments for discrete learning activities, may prove useful. At this stage, their questionnaire results have not shown evidence of student progression or learning. The tool has more recently though been refined and improved and further results are awaited (Lockeman et al., 2016). (For further information, see Section 9.7.)

However, the principle of developing a questionnaire mirroring the domain competencies, and administered over the course of an IPE curriculum, to assess individual student learning progression at programmatic level - as Curran and colleagues (Curran, Sharpe, Flynn, & Button, 2010) have also done - deserves future consideration.

5.4.3 Approaches to IPE group assessment

The ability to accurately and fairly assess students summatively as a group or team (rather than as individuals within a team) is as yet challenging; there is an acknowledged paucity of validated tools suitable for use at pre-registration level. Of note is the lack of support, at least in 2016, for student team assessment as a team by the authors of the international consensus statement on IPE assessment (Rogers et al., 2017).

However, the value of students being able not only to self-assess themselves, but also each other as individuals working in a team, is well-recognised. The judicious use of peer assessment tools can have a valuable place in the assessment of group work (Oates & Davidson, 2016). They describe their own experience:

> *We have used a range of strategies including the development of a team learning agreement at the beginning of each semester. The purpose of this document is for each team to establish expectations for working together, particularly in relation to communication, and to*

> *establishing agreed times for team meetings. Facilitators use this agreement when working with teams to resolve any conflict that may arise during the semester. Teams are required to keep a team journal as they work on an enquiry and group assessment task over a typical period of 4 to 5 weeks. Team meetings are chaired and minuted, with this information included in the team journal. Finally, teams are asked to collectively assign a percentage weighting to each individual team member's contribution to the final product. This is not used to proportion marks to individual students. Rather, facilitators use this along with other information, such as class attendance and consultation with individual students, to make decisions in relation to the awarding of a grade to a student who has not made a significant contribution to the group task. There are, of course, a range of strategies and software available which can facilitate this sort of peer review of contribution to group work.* (Oates & Davidson, 2016) p.134.

Experience at Otago to date has duly surfaced issues that can occur in IPE group assessment, and therefore require thoughtful assessment design. For example:

- An IPE activity may include the whole year cohort of some health professional programmes (who may typically be graded), and only part of the year cohort of other programmes (who may therefore typically not be graded)
- An IPE activity may include students from health professional programmes routinely assessed by a grade, and others routinely assessed by pass/fail
- Some students – individuals or health professional groupings – may participate more diligently – actually or perceptually - in group work than others.

Any or all of these issues can create tensions or difficulties, perhaps especially for students, and also for tutors and convenors. Introduction of group-to-group peer feedback, as a process alongside staff feedback but separate from graded assessment, is one approach that can be considered. (This approach was taken by the IPE Non Communicable Diseases Module in 2018, with some success – for a copy of the peer-to-peer rubric used, see Section 9.8.)

5.4.4 Opportunities for remediation

In IPE learning activities, as in any area of the curriculum, there are instances where students cannot, or do not, fulfil all elements of the programme to achieve intended learning outcomes. In such cases – whether as a result of poor performance or unavoidable absence, opportunities for remediation close the gap between what a student knows, and is expected to know.

Student absences pose a particular problem in IPE, where group work, communication, role clarification, teamwork and collaboration are the essence of the learning experience and outcomes. Student absences impact directly not only on the absent student(s), but also on other students whose exposure to other professions and perspectives is diluted. Students may miss an IPE session e.g. through illness, other personal reasons, or academic leave granted on other grounds.

As noted under Section 5.4.3, a student may also under-participate in interprofessional learning, even where physically present. Yet, such instances can provide sound opportunities to develop understanding of interprofessionalism, if responsive opportunities for remediation are given.

Effective IPE remediation begins with the design of the IPE activity – i.e. clarity as to IPE learning outcomes, how the activity supports these, and how they are to be assessed, allows a convenor/facilitator to be clear as to when a student is at risk and requires opportunity for remediation.

Good practice calls for early, proactive statement of expectations, and how opportunities for remediation will be provided should these not be met. For example:

> *Attendance at the timetabled weekly sessions and engagement in the module is **compulsory** for ALL students on the participating programmes. … IPE groups are structured to ensure an interprofessional balance, which is part of your and others' learning. Only extenuating circumstances will be considered for leave/timetable changes, as opportunities for changes are limited. … Should you miss a session e.g. through illness, the Module Convenor and Tutor will determine the requirements to meet the learning outcomes e.g. by providing written evidence of your contribution to group work, writing and submitting a reflective statement, discussing a reflective statement/essay in interview, etc. (University of Otago & Otago Polytechnic, 2019) p.3*

Here it can be seen that communication of opportunities for remediation includes indicating that individual circumstances and needs will be taken into account, i.e. remediation processes are consistent but not one-size-fits-all. This is of particular importance in clinical IPE, where individual clinical skills gaps are likely to require individualised remediation (Nicholas & Curren, 2017).

> *When developing a remediation plan, it is recommended that the following elements are documented: the deficit or competency being addressed, a specific description of the behaviors or actions of concern, the time frame for remediation, the specific plan, and the objective measures that will be used to assess the deficit post remediation. Be sure to document the date that the plan was communicated to the learner*. (Guerrasio, 2014) p.329

In Section 6.4, discussion of standard-setting in IPE includes attention to the possibilities for an IPE 'credit equivalence' system at Otago, i.e. that students would progressively accumulate a set number of credits in a variety of learning opportunities over the course of their degree. Clearly, where any such system is implemented, robust and equitable pathways to remediation in IPE activities across the curriculum need to be provided.

In the event that, despite repeated, diverse and fair opportunity, remediation is not successful, the enacted credit system would result in a student's non-attainment of IPE credits (as one essential component of their degree). Ultimately, such students would therefore not be granted their health professional degree, even if all other requirements for that degree were met.

5.5 Conclusions for IPE assessment at Otago

Conclusion 13: Assessment of IPE competencies

Agreed IP core competency domains provide a clear guide as to what to assess, notwithstanding the need to interpret within local contexts. Not all competency domains can (or need) be assessed in every learning activity, but are cumulatively assessed over the course of an IPE curriculum (programmatic assessment).

Observations of team behaviour are optimally included if possible, even if to make a judgement about the perceived team skills of individuals, rather than of the team as a whole. Profession-specific, topic-specific and interprofessional competencies are best assessed together if possible, as seamless integration of competencies best represents good health care practice.

The use of several different methods of assessment, well-aligned to discrete learning activities at different stages of learning, including at IP clinical placements, is appropriate.

Robust and equitable pathways to remediation in IPE activities across the curriculum need to be provided.

Methods for programmatic assessment of progressive acquisition of IP competencies in individual students progressing through IPE curricula are needed but are still under-developed.

For Otago, ensuring selected competency domains are assessed at learning-activity level, and are all included somewhere over the course of an IPE curriculum, is a realistic, intermediate goal.

Conclusion 14: IPE assessment tools

The T-OSCE, CBOATS and the iTOFT are observational tools that show promise and could be trialled at Otago to assess teamwork.

Given the current state of knowledge, and with no one tool yet shown to assess teamwork reliably for summative purposes, the continued but cautious use of a variety of non-validated methods is justified, at least at present.

The principles espoused in the international consensus statement on the assessment of IPE outcomes give some guidance as to how to devise and use such tools, and how to consider using the tools that are available for formative assessment and feedback.

The authors of the international consensus statement do not yet support student team assessment as a team, and there is a paucity of validated tools suitable for use at pre-registration level. However, the value of students being able not only to self-assess themselves, but also each other as individuals working in a team, is well-recognised. The judicious use of peer assessment tools can have a valuable place in the assessment of group work.

6 Chapter 6: Organisation, standard-setting and accreditation of learning activities and IPE curricula

6.1 Approaches to introducing IPE curricula and activities

As interprofessional education activities move from being isolated learning initiatives/activities to more integrated, articulated theory-driven programmes (Barr et al., 2014; Lee et al., 2013), the next or concomitant step at pre-registration level is to establish guidelines/standards and monitoring for IPE curricula (see Section 4.9.2). By definition, these span different health professional degree programmes and/or later training, while also progressing through degree programmes vertically, as well as for specific learning activities.

Globally, educational institutions and, less commonly, health service providers, have been developing a variety of mechanisms to articulate and set standards for IPE within and across institutions. There are two principal ways that interprofessional learning activities and curricula have been introduced (Langton, 2009; Nisbet et al., 2011). Although there are some hybrid examples, readers will recognise the need to distinguish between the two different approaches.

The first approach to introducing IP curricula/activities is through de novo curricula design (at new faculties), or wholesale restructuring of health sciences faculties or their equivalent, where interprofessional learning is a core building block in a new, closely coordinated curricular design for a number of programmes. This model in essence was adopted as one of the very first, at Linköping University nearly 30 years ago, and has been subsequently refined several times (Falk et al., 2015; Wilhelmsson et al., 2009). More recently, such a re-organisation has been well described at Curtin University, Western Australia, where, after a wholesale restructure, the entire first year of learning for 19 different health professional programmes is conducted interprofessionally, covering a wide variety of topics common to the health professions and enabling students to meet specific interprofessional competencies (Jones, Downie, & Brewer, 2013). In subsequent years, students are brought together for further IPE curricular components, fully embedded in the core disciplinary curricula, in various configurations and particularly in interprofessional clinical placements (Brewer & Barr, 2016). Another variant is the introduction of an entirely new interprofessional degree qualification at the University of Heidelberg, designed to be undertaken concurrently alongside, and integrated with, a range of health professional training programmes (degree-based and non-degree-/workplace-based). This arrangement, taking substantial resource, results in the awarding of a university degree to some students who would not otherwise formally be awarded a degree (Mahler, Berger, Karstens, & et al., 2015).

The second approach to introducing IP curricula/activities is through the more gradual introduction of discrete IPE learning activities within established uniprofessional programmes, including in clinical placements. This is the far more common approach, and is often perceived as easier to manage in long-established programmes. It can also work well (Centre for Interprofessional Education University of Toronto, 2018); while usually requiring concerted parallel effort to establish learning progression for students. In many cases, the IPE curriculum is developed as a 'retrofit' to the learning activities.

Significant advantages of the first 'proactive' approach are the ability to align timetables and IP learning opportunities, as well as aligning other resources and logistical systems to support IPE. Other main advantages of this approach include opportunities to establish from the outset equivalence of intended learning outcomes (Biggs & Tang, 2007), and appropriate assessment both at learning activity level and more broadly at IPE curricula level. Associated staff training and professional development can serve the dual purpose of engagement in planning and curricular design undertaken interprofessionally from the outset, as well as the early development of interprofessional teaching and facilitation skills. The disadvantages are obvious: the upfront costs of curricular upheaval and wholesale change are considerable, may be overly ambitious, and may not be necessary.

When interprofessional education is 'retrofitted' as in the second, far less disruptive approach, few, if any, such embedded opportunities exist. Timetabling, existing curricular content and volume, lack of staff awareness and confidence, can all act as powerful disincentives to the systematic introduction of staged learning activities for all students, making the satisfactory development of pedagogically robust IPE curricula at institutional level extremely challenging. There have been many examples of IPE learning activities offered only outside of 'normal' hours, being voluntary, having little or no assessment, and being of questionable value to students and staff. Students quickly recognise any discrepancies between expectations from their various respective 'home disciplines' and repeatedly ask that all assessments be equally valued (see comments on the Otago experience in Section 5.4.3).

To overcome many of these problems - and to ensure safe, effective IP learning with an emphasis on quality - educational institutions have sought ways to develop an IPE pathway or curriculum (or curricula) of learning, allowing for incorporation of a variety, or selection, of learning activities that nevertheless, over the course of a degree programme, successively build opportunity for IP competency achievement, within a clear framework for their faculty or institution.

Many have now begun developing systems of 'accrediting' discrete learning activities so they meet IP educational standards and can form part of integrated IPE curricula that students undertake over the course of their degree programmes. Some of these also apply to those programmes developed 'proactively', and are particularly useful where a variety of IPE learning opportunities can/have to be offered in diverse settings. Some systems also actively lend themselves to fostering student choice.

6.2 Coordinating, enhancing and monitoring learning activities/programme components

There are examples of systems for registering learning activities within institutions, which spell out the criteria for what a learning activity is, and what standards it has to meet: usually in terms of who participates, what the learning outcomes are, and how assessment is undertaken. This is often done within the framework of an intentionally-designed IPE curriculum which, in turn, is subject to programmatic criteria, standards, monitoring and evaluation. (See **Table 9**, Section 9.9)

Other institutions put an emphasis on students accumulating points of some sort, as well as, or instead of, accrediting the learning activities. Students are increasingly required to accumulate certain numbers of points to meet degree/graduation/registration requirements. This arrangement works well in situations where there is wide choice available and students can choose how to meet

some of their IPE requirements, while being mandated to have to achieve a certain number and type of points. (See **Table 10**, Section 9.10)

(For exemplar application forms to register IPE learning, see Section 9.11)

6.3 Integrating IPE curricula

The wide variety of systems being developed suggests varying views of the degree to which IPE is integrated into health professional education. There is remarkably little in the literature about 'accreditation of IPE learning activity' or 'accreditation of IPE curriculum' systems.

However, views as to valid criteria for IPE learning activities, for those that have begun articulating these, are much more aligned, probably reflecting the body of literature that addresses characteristics of effective IP learning activities.

The University of Toronto is one of very few examples to hand that includes a requirement for teachers to come from different professions and be trained as facilitators.

6.4 A 'credit equivalence' system for Otago

It is clear from investigating a wide range of institutions and their various systems, that at Otago - especially given the highly distributed nature of our teaching and learning, and clinical learning - all IPE learning activities need to be able to be compared to each other, and mapped to some kind of credit system, if we are to make the attainment of an IPE curriculum, utilising a variable, diverse selection of multiple learning opportunities, feasible and transparent over the course of a health professional degree.

The proposal below is a student-centred system of learning activity 'credit equivalence' for IPE at Otago.

At Otago, as aligned with the New Zealand Qualifications Framework (NZQF) and the Committee on University Academic Programmes (CUAP) guidelines, one workload point generally represents 10 hours of work for an average student wishing to achieve an average grade. IPE points would be allocated and would accumulate towards credits on the basis of workload hours as just defined, as well as complexity of learning, and learning objectives and outcomes.

The key features of the proposed system, and how it would work, are set out below.

6.4.1 Learning activities

- A matrix captures three key elements for each learning activity:
    - Complexity of learning
    - Student workload
    - IP competency domains (learning outcomes) addressed
- Each element is ascribed a number of points

- Points for each element are accrued and converted to **credits** to simplify the matrix results, 'smoothing out' variation across the different elements; a principle adopted from the student-centred 'Bologna process' concept of credits (European Commission & Bologna Process, 2015) pp10-11 (see Section 2.6)
- A certain number of **credits** are then applied to each learning activity
- Learning activities are registered in a **Learning Activity Register** through an application process, and allocated a certain number of **credits**
- Learning activities of an increasingly wide variety can be successively added to the menu of opportunities through the application process; there are many other potential opportunities, such as online learning activities and student-led learning activities, which are not yet explored.

6.4.2 Students

- Students progressively accumulate credits in a variety of learning opportunities over the course of their degree
- Students attain a set number of credits by an approximate midpoint in their degree – the midpoint to be determined by the relevant programme – as progressively added to reach, or exceed, the required IPE credits total for that programme
- Students can only accrue credits from IPE learning activities that are registered and meet minimum requirements
- Students gain a set minimum number of IPE credits in order to complete their degree (some by a midpoint determined by their programme), having demonstrated that they are collaborative-practice ready as they graduate and enter the workforce; also while meeting discipline-specific accreditation requirements in respect of IPE; and as accommodated suitably within the student's permanent academic record
- The number of IPE credits required by each health professional programme may need to vary: in particular, what we suggest here as a minimum may be insufficient for some of the longer degree programmes.

6.4.3 Points values

6.4.3.1 Points value: Complexity of IPE learning

The following points are allocated for capturing complexity of IPE learning (denoting a more complex set of skills and knowledge which are generally, although not inevitably, reflected in the setting for the learning):

- Exposure (case-based, problem-based) = 1 point
- Engagement (simulated or actual patient/client involvement) = 2 points

- Immersion (workplace learning involving patient care) = 3 points.

6.4.3.2 Points value: IPE student workload

The following points are allocated for IPE student workload, as consistent with Otago's current system of workload points (https://www.otago.ac.nz/study/planning/workload.html):

- 1-10 hours = 1 point
- 11-20 hours = 2 points
- 21-30 hours = 3 points
- 31-40 hour = 4 points
- 41-50 hour = 5 points
- 51-60+ hours = 6 points

6.4.3.3 Points value: Expected IP competency domains (learning outcomes)

The following points are allocated for the six IP core competency domains that are assessed:

1 competency domain is assessed (as per 2+ related intended learning outcomes) = 1 point

2 competency domains are assessed (as per 2+ related intended learning outcomes) = 2 points

3 competency domains are assessed (as per 2+ related intended learning outcomes) = 3 points

4 competency domains are assessed (as per 2+ related intended learning outcomes) = 4 points

5 competency domains are assessed (as per 2+ related intended learning outcomes) = 5 points

6 competency domains are assessed (as per 2+ related intended learning outcomes) = 6 points.

The proposals are illustrated in **Table 2** with examples drawn from the range of learning activities we currently have underway at Otago.

6.4.4 Credits and credit value

- A set number of **credits** are ascribed to each Learning activity, accumulated and converted from points ascribed to all three elements of the matrix.

(See section 2.6 for definitions of credits and credit value)

6.4.4.1 Conversion of points to credits

Credits are calculated as the mean of the points totals of three matrix factors (complexity of IP learning, workload hours, and number of IP competency domains covered), also using Swedish rounding – i.e.:

- 3-4 points = 1 credit
- 5-7 points = 2 credits
- 8-10 points = 3 credits
- 11-13 points = 4 credits
- 14+ points = 5 credits

Table 2: Example of calculation of IPE credits for a specific learning activity by accumulation of points

Complexity	Workload	Domains	Points total	Mean of the three points (Swedish rounding)=credits
1	1	1	3 points	1 credit
2	2	3	7 points	2 credits
3	2	4	9 points	3 credits
3	6	6	15 points	5 credits

6.4.5 Requirements to complete the IPE curriculum

To complete the IPE curriculum, a student would need, as a minimum, to e.g.:

- Have completed at least 2 learning activities of varying complexity (as at 2019); and at least 3 when learning activities are fully developed (e.g. 2025)
- Gain a minimum of 2 credits, preferably more (as at 2019), by an approximate midpoint in their degree – the midpoint to be determined by the relevant programme
- Gain a minimum of 6 credits (as at 2019) – from a student perspective, 6 credits can be obtained over 2 intentional learning activities, typically* taking between 15-25 hours in total across a degree programme of several years
- Gain a minimum of 8-9 credits in time (when fully developed, e.g. 2025) – from a student perspective, 9 credits can be obtained over 3 intentional learning activities, typically* taking between 20 -35 hours in total across a degree programme of several years.

* Some students may choose to dedicate more hours to acquiring their IPE credits, e.g. if they attend the Tairāwhiti complex-immersion IPE programme. Additionally, complexity of IP learning and the range of IP competency domains addressed by an IPE learning activity, moderate the nature of a student's IP learning, over and above completion of workload hours, to better account for effort and learning.

(For a **more extensive list of IPE learning activities at Otago**, see Section 9.4)

(For **expanded versions of the two tables below (Table 3 and Table 4)**, see Section 9.12)

Table 3: Example of IPE credits applied to current IPE learning activities

IPE learning activity	IPE complexity of learning points	IPE workload points	IPE learning domain points	Points and Credits
Note: IPE credits account for IP learning. They may/may not overlap with other health professional learning objectives and outcomes. For example, In the case of the Tairāwhiti programme, IP learning workload/objectives/outcomes feature alongside Hauora Māori, Rural Health and discipline-specific workload/objectives/outcomes.				
Tairāwhiti Interprofessional Education Programme [TIPE]	3	6	6	15 points **5 credits**
INTERact Nelson	3	2	5	10 points **3 credits**
INVOLVE (IPE Long-term conditions management) (UOW)	2	2	6	10 points **3 credits**
IPE Discharge Planning Simulation (UOC)	2	1	6	9 points **3 credits**
IPE Non Communicable Diseases Module (Dunedin)	1	2	5	8 points **3 credits**
IPE Teamwork in Heart Failure Management (Dunedin)	2	1	6	9 points **3 credits**
Interprofessional simulation training day (Invercargill)	2	1	4	7 points **2 credits**

Table 4: Selected examples of IPE credit attainment by student/campus/learning activity, over the course of their degree

Exemplar student(s)	IPE activity/credits	IPE activity/credits	IPE activity/credits	Total credits
Note: This table illustrates how students across the range of health professional disciplines and campuses/sites might accumulate IPE credits. Given that Otago's suite of IPE activities is still evolving, some cases are flagged as hypothetical for specific years and/or as envisaged for the future. The complexities of developing IPE to scale equitably across all Otago sites is apparent in these hypothetical cases and/or where exemplar students fall short of prerequisites/credits, e.g.: ** = no immersion opportunity for this student at present* *† = points below recommended minimum at present*				

Exemplar student(s)	IPE activity/credits	IPE activity/credits	IPE activity/credits	Total credits
Palmerston North Radiation Therapy (or Medical or Physiotherapy) student	IPE Hauora Māori Orientation (Whakawhanaungatanga) = 2 credits	INVOLVE = 3 credits	IPE Cancer Care = 3 credits	8 credits
UOW Radiation Therapy student in Wellington/on placement in Auckland	IPE Hauora Māori Orientation (Whakawhanaungatanga) = 2 credits	INVOLVE = 3 credits	-	5 credits*†
Nelson Medical student (for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Quality and Safety Simulation 2019 = 3 credits	Nelson INTERact 2020 = 3 credits	9 credits
UOC Medical student in Christchurch (for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Discharge Planning Simulation (2020) = 3 credits	-	6 credits*
Dunedin Dentistry student (for specific/future years)	IPE Working Together in Clinical Pathology pilot 2018 = 2 credits	-	Tairāwhiti Interprofessional Education Programme 2019 = 5 credits	7 credits
Dunedin Medical student (for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Teamwork in Heart Failure Management 2019 = 3 credits		6 credits*
Invercargill Dietetics student	IPE Non Communicable Diseases Module = 3 credits	-	Interprofessional simulation training day = 2 credits	5 credits*†

6.4.6 Institutional register of IPE activities

An online institutional register and repository of all IPE activities is a key first step in developing a coordinated system and equivalence process. An accessible register and application process will allow a wide variety of learning activities to be considered, compared, mapped and monitored within a sound IPE curriculum framework.

The register would explicitly underpin and support:

- Development and design of IPE activities that meet all guidelines and minimum criteria
- Integration of IPE activities in a health sciences curriculum of progressive interprofessional learning and a system of IPE credit equivalence
- Monitoring, quality assurance and continuous improvement of ongoing IPE at activity and programmatic levels
- Easy access to IPE information for all Otago students and staff, as well as selected external partners and others engaged or interested in our programmes.

6.5 Conclusions for a system of credit equivalence in IPE at Otago

Conclusion 15: IPE attainment

Attaining a formal IPE curriculum over the course of a health professional degree needs to be both feasible and transparent. At Otago - especially given the highly distributed nature of our teaching and learning, and clinical experience - all IPE learning activities need to be able to be compared to each other, and mapped to a system of Division-wide credit.

Conclusion 16: IPE credit matrix at Otago

As the basis of a system of credit equivalence, in the context of a programmatic IPE curriculum in the health sciences:

- IPE credits would be allocated to learning activities on the basis of workload hours, as well as complexity of learning, and expected learning outcomes.
- IPE credits would be accumulated by students over the course of a health professional degree programme.

Conclusion 17: Prerequisites for IPE credits

An IPE activity would be required to satisfy e.g. the following prerequisites:

- Involve students from two or more professions (preferably three or more)
- Involve IPE-trained staff, from two or more professions wherever possible
- Include at least one explicit IP learning outcome – preferably more than one
- Involve interactive learning
- Assess at least one IP competency domain.

(Also see Conclusion 25, re guidelines and minimum criteria for IPE activities in an integrated curriculum.)

Conclusion 18: Points for complexity of IPE learning

The following points are proposed for levels of IPE learning:

- Exposure (case-based, problem-based) = 1 point
- Engagement (simulated or actual patient/client involvement) = 2 points
- Immersion (workplace learning) = 3 points.

Conclusion 19: Points for IPE student workload

The following points are proposed for IPE student workload:

- 1-10 hours = 1 point
- 11-20 hours = 2 points
- 21-30 hours = 3 points
- 31-40 hour = 4 points
- 41-50 hour = 5 points
- 51-60+ hours = 6 points

Conclusion 20: Points for IP competency domains (learning outcomes)

The following points are proposed for IP competency domains/learning outcomes:

- 1 IP competency domain/learning outcome is assessed = 1 point
- 2 IP competency domains are assessed = 2 points

- 3 IP competency domains are assessed = 3 points
- 4 IP competency domains are assessed = 4 points
- 5 IP competency domains are assessed = 5 points
- All 6/6 competency domains are assessed = 6 points.

Conclusion 21: Conversion of points to credits

Credits are calculated as the mean of the points totals of three matrix factors (complexity of IP learning, workload hours, and number of IP competency domains covered), also using Swedish rounding – i.e.:

- 3-4 points = 1 credit
- 5-7 points = 2 credits
- 8-10 points = 3 credits
- 11-13 points = 4 credits
- 14+ points = 5 credits

Conclusion 22: Requirements to complete the IPE curriculum

To complete the IPE curriculum, a student would need, as a minimum, to e.g.:

- Have completed at least 2 learning activities of varying complexity (as at 2019); and at least 3 when learning activities are fully developed (e.g. 2025)
- Gain a minimum of 2 credits, preferably more (as at 2019), by an approximate midpoint in their degree – the midpoint to be determined by the relevant programme
- Gain a minimum of 6 credits (as at 2019)
- Gain a minimum of 8-9 credits in time (when fully developed, e.g. 2025).

6.6 Conclusions for integrating IPE curricula at Otago

Conclusion 23: Nature of integrated IPE curriculum

An agreed Otago IPE curriculum needs to be clearly described and communicated to students and staff in its essential components, e.g. longitudinal/vertical IPE curriculum, progressive IPE levels and activities through course of health professional degree programmes, programmatic IPE learning

objectives and outcomes, registered IPE activities in a system of credit equivalence and quality assurance, and so on.

Conclusion 24: Status of integrated IPE curriculum

The agreed status of the IPE curriculum would be clearly described and communicated to students and staff, e.g. mandatory participation for health professional students, with a single progressive pathway, in which credits can be attained by a variety of IPE learning activities and activity combinations.

Conclusion 25: Integrated guidelines and criteria for IP learning, assessment and evaluation

Guidelines and minimum criteria would be developed for all interprofessional learning activities, including:

- Criteria for registering IPE activities in an Otago repository, i.e. specification of process and content details of the activity (also see Conclusion 11, Conclusion 17, Conclusion 27).
- Guidelines and criteria for assigning/distinguishing levels of learning (exposure, engagement, immersion, mixed) (also see Conclusion 26)
- Minimum criteria for learning objectives and learning outcomes for an IPE activity
- Guidelines for student workload
- Guidelines for faculty training and workload
- Guidelines and criteria for assessment
- Guidelines for student feedback, tutor feedback, IPE activity evaluation and IPE programmatic evaluation.

Conclusion 26: Integrated progressive IP learning

IPE levels of learning (exposure, engagement, immersion) as currently defined, and as assigned to existing IPE activities, would benefit from review to ensure consistency, to enable further specification, and to support seamless integration in an IPE curriculum across the health sciences degree programmes.

Conclusion 27: Institutional register of IPE learning activities

An online institutional register and repository of all IPE activities is a key first step in developing a coordinated system and equivalence process. An accessible register and application process will allow a wide variety of learning activities to be considered, compared, mapped and monitored within a sound IPE curriculum framework. The register would serve and support:

- Development and design of IPE activities that meet all guidelines and minimum criteria (see Conclusion 25)
- Integration of IPE activities in a health sciences curriculum of progressive interprofessional learning (see Conclusion 26) and a system of IPE credit equivalence (see Conclusion 15 through Conclusion 22)
- Monitoring, quality assurance and continuous improvement of ongoing IPE at activity and programmatic levels
- Easy access to IPE information for all Otago students and staff, as well as external partners and others engaged or interested in our programmes.

7 Chapter 7: Evaluation of IPE learning activities, curricula and associated programmes

7.1 Why IPE evaluation matters

Evaluation of programmes of study is important for a number of reasons, some inherently at odds with others. While evaluation can aid in establishing and monitoring the effectiveness of IPE programmes, it is also important in exploring where, how, why and for what purpose IPE learning activities or whole programmes are set up in the first place (Freeth et al., 2005; Payler, Meyer, & Humphris, 2008; Pullon, Darlow, et al., 2016). What educators and/or students see as the most important effects of study programmes may not be the same as - or at least may have different emphases from - large education or health delivery institutions, or health and social care providers, and this will differ again from what patients/clients see as critical learning.

As in Section 5.1, we distinguish here between the aims of assessment (for individual students, or groups of students, in meeting defined, achievable learning outcomes) and those of shorter- and longer-term evaluation (of learning activities per se, IPE curricula and ultimate effect on clinical practice and patient/client care).

> *Evaluation is about the quality of what is done or delivered, while assessment focuses on what is learnt by those undertaking the intervention. Assessment is however one component of an evaluation – the evaluation of learning.* (Thistlethwaite et al., 2015) p.292

Confusion has arisen, in part because the terms 'evaluation' and 'assessment' are sometimes used differently and interchangeably in the United States without further qualification; but for clarity we have chosen here to use Thistlethwaite's distinction throughout this report. This chapter is therefore about evaluating the quality of educational endeavour. Assessment of student learning is addressed in Chapter 5.

7.2 Outcomes-based evaluation

Outcomes-based evaluation – by which the success or otherwise of a particular programme of study is considered largely in terms of what outcomes students have achieved as a result of the study - currently predominates the education evaluation landscape (Oates & Davidson, 2016). Barr and colleagues (Barr et al., 2005) have modified the time-honoured Kirkpatrick levels of outcomes-based evaluation first developed in the 1950s (Kirkpatrick & Kirkpatrick, 2006). Their modifications (see **Table 5**, below) have proved useful in extending the utility of the framework; while also serving to demonstrate the preponderance of basic-level evaluation, and a paucity of more sophisticated and complex evaluation studies of IPE.

Table 5: Classification of interprofessional outcomes (Barr et al., 2005)

Level 1	Reaction. Learners' views on the learning experience and its interprofessional nature.
Level 2a	Modification of perceptions and attitudes. Changes in reciprocal attitudes or perceptions between participant groups. Changes in perception or attitude towards the value and/or use of team approaches to caring for a specific client group.
Level 2b	Acquisition of knowledge and skills. Including knowledge and skills linked to interprofessional collaboration.
Level 3	Behavioural change. Identifies individuals' transfer of interprofessional learning to their practice setting and their changed professional practice.
Level 4a	Change in organisational practice. Wider changes in the organisation and delivery of care.
Level 4b	Benefits to patients/clients. Improvements in health or well-being of patients/clients.

A range of self-report tools that purport to measure IP learning outcomes pre- and post-course (predominantly Level 2a or 2b of the Barr et al., typology) have been developed, one of the most well-known being the Readiness for Interprofessional Learning Scale (RIPLS). First described in 1999 (Parsell & Bligh, 1999), the RIPLS - although originally validated in its original context, widely used and successively adapted, updated and translated - has proved frustrating to use in anything other than a few specific contexts (Oates & Davidson, 2015).

Other tools summarised and constructively critiqued in the same paper (Oates & Davidson, 2015) include (see **Table 13**, Section 9.13):

- ASL, Attitudes to Shared Learning
- GRPQ, Generic Role Perception Questionnaire
- ICAR, Interprofessional Collaborator Assessment Rubric
- IEPS, Interdisciplinary Education Perception Scale
- ISVS, Interprofessional Socialisation and Valuing Scale
- KidSIM, KidSIM Attitudes Towards Teamwork in Training Undergoing Designed Educational Simulation (ATTITUDES)
- StudData Questionnaire
- UWEIPQ, University of the West of England Interprofessional Questionnaire.

Of these, Oates & Davidson consider the IEPS, UWEIPQ, GRPQ, ICAR and KidSIM to be the most robustly developed. At Otago, we have had some experience with another tool, the Team Skills Scale/TSS, and found it useful when combined with other scales (Darlow et al., 2015). In 2018, the IPE Non Communicable Diseases Module successfully used (with permission) a revised Students Perceptions of Interprofessional Clinical Education (SPICE-R2) instrument (Zorek et al., 2016).

The range of instruments developed for assessing performance in primary care practice settings (Agency for Health Care Research & Quality, 2016) – summarised, and referred to in more detail, in Section 5.4 - are perhaps worth considering as useful tools for programme evaluation; but as noted, very few of these were developed with pre-registration educational programmes in mind.

Oates and Davidson (2015) point to a number of significant limitations and poor application of such instruments. They highlight an often observed mismatch between the apparent lack of difference between pre- and post-evaluation scores, as compared with concurrently collected qualitative data which may suggest something quite different. Nevertheless, if validated and found reliable in specific contexts and for particular purpose,

> *Outcomes-based evaluation can provide quantitative evidence of the effectiveness of an IPE initiative that can be obtained relatively quickly and efficiently.* (Oates & Davidson, 2016) p.138)

While other outcomes (such as staff learning, and stakeholder satisfaction) can be included in an outcomes-based framework, often they are not; this is partly due to expediency, but also because process elements of success or otherwise are not well captured. Because interprofessional learning incorporates social and behavioural change, not only for students but for learning environments and workplaces, evaluation needs to capture a wide range of process elements as well as outcomes (Haji, Morin, & Parker, 2013).

Part of the problem with sole reliance on outcomes-based frameworks rests with limitations that apply to educational research more widely; namely, that demonstration of pre-registration educational achievement is difficult to relate directly to later post-registration practice, because so many external and system variables apply to the latter. Furthermore, the smaller the programme component (e.g. a specific course, module, or learning activity, such as an interprofessional component within an otherwise uniprofessional degree programme), the more unrealistic this becomes. It is no accident that few studies to date meet levels 3 and 4 in Barr's typology in **Table 5**; although level 3 exceptions include work at Memorial University (Curran et al., 2010), the University of the West of England (Pollard & Miers, 2008), and our own work in progress (Darlow et al., 2015).

Thus, studies relating pre-registration programmatic evaluation to post-registration practice by longitudinally following individual trajectories, are not often done; evidence for whole-of-programme effectiveness instead relies on collecting indirect and often anecdotal evidence, even if from multiple sources. Thistlethwaite (2016) puts it well:

> *Such evidence has not been required of many other educational innovations before widespread implementation … no [such] robust evidence has been generated to show that*

> *uniprofessional education (e.g. medical education at the pre-licensure level) directly improves patient/client outcomes.* (Thistlethwaite, 2016) p.357

However, she goes on to promote a more pragmatic view espoused in the influential IOM report, (Institute of Medicine, 2015):

> *What education can be shown to achieve is that learners meet learning outcomes that have been developed as applicable to optimal health care delivery that improves outcomes (IOM, 2015a).* (Thistlethwaite, 2016) p. 357

7.3 Other theoretical frameworks

Other theoretical frameworks, including a range of qualitative methodologies, almost certainly have a place in the evaluation of IPE. Thematic and content analysis frameworks, using focus group and interview data collection methods, can yield more in-depth data, compared to proscribed instruments and measures. Such data collection has limitations in being largely restricted to information based on participant perceptions, although findings are considerably strengthened if such data can be collected over sequential and successive time points (Pullon, Darlow, et al., 2016).

Direct observation techniques that allow for observation of collaborative behaviours in practice (including simulated practice) are possible (although time-consuming and needing careful design) (Morgan, Pullon, Macdonald, McKinlay, & Gray, 2017); but extending these to follow individuals from student stage to practitioner stage is not feasible. Nevertheless, robustly-designed, rigorously-analysed focus group and interview studies, if used to explore not only student perceptions but also those of staff and other stakeholders, can support and extend knowledge from multiple viewpoints.

Again, Oates and Davidson (Oates & Davidson, 2016) provide a useful, succinct overview. They review the notion of 'emergence' (Haji et al., 2013), that is: having evaluation open to discovery of unintended consequences, or other effects which go beyond the expected or intended learning outcomes for students. Realist evaluation theory also holds promise: this allows for complexity, and not necessarily linear causation, to be recognised in both education and health; and it considers paramount the context in which the evaluation takes place (Flood, 2017; Wong et al., 2012).

To date, the 'patient voice' has also been largely absent from evaluation of educational programmes, whether uni- or interprofessional (Morris & O'Neill, 2006). In part this is inevitable, since there is a long and complex gap between any discrete educational components and tangible aspects of care in which consumers might be directly involved. But greater patient/client engagement in interprofessional educational processes and educational research, and opportunity to observe change over the course of a degree programme, has potential to increasingly engage and value patient and consumer perspectives (Towle et al., 2016).

A range of methods is therefore likely to be needed to make sense of the ongoing evaluation of interprofessional education endeavour. Such comprehensiveness is unlikely to be realistic at learning-activity level, but, despite the challenges, becomes important when evaluating effectiveness and wider influence at a curricular or programme qualification level; and this is where more attention is needed.

> *Ideally, it is the combination of evaluation activities that creates a collective picture of the effect of an IPE initiative, more complete and more powerful than any one aspect alone. This combined view then better allows for a particular programme's context, and its wider effects, to be considered as integral to the evaluation, instead of standing apart from it.* (Pullon, Darlow, et al., 2016) p.147

Evaluation of, and research into, IPE curricula at programmatic level also need to extend over time and repeatedly collect comparable data. The value or otherwise of some process elements, or unusual or unintended consequences, may not become evident immediately. Much of the evaluation literature has concentrated on demonstrating short-term outcomes as a result of discrete learning activities. This is a necessary stage in the development of IPE, but ultimately not sufficient to inform further development, and demonstrate sustained translation into clinical practice.

7.4 Evaluating and monitoring quality in IPE at Otago

In summary, evaluation of discrete IPE learning activities is important for quality and monitoring purposes. Despite recognised limitations, choice of one available and appropriate outcomes-based instrument, combined from time to time with focus group and/or interview data, is likely to be realistic for evaluation, especially if used repeatedly over time. It can be a mistake to be over-reliant on instruments validated in other contexts; home-grown instruments may well have an interim place. The use of a standard bank of questions to be incorporated into routine student evaluations can make this less onerous (an example has already been developed at Otago, in conjunction with our own Higher Education Development Centre (HEDC); Otago users can request this questionnaire at http://inform.otago.ac.nz/userHome).

The exception will be the more extended complex-immersion clinical placement programmes, such as the Tairāwhiti Interprofessional Education Programme, and other clinical placement situations, particularly those in a range of rural areas. Here, the input and views of communities, clinical workplace providers and local stakeholder organisations, are key evaluation components, and a wider range of evaluation is needed.

At the IPE curricular level, and as we develop this framework, the ongoing collation of evaluation information from discrete learning activities will be increasingly important. Ideally, this will also entail development of an overarching evaluation framework to explore the 'where, how, why and for what purpose' the IPE curriculum is established. Because our IPE curriculum at Otago will be threaded through other professionally-specific curricula, this first requires dialogue and agreement with other programmatic evaluations.

7.5 Conclusions for evaluating IPE at Otago

Conclusion 28: Evaluation of IPE learning activities

The following considerations are important in evaluating IPE learning activities:

Who to seek evaluation data from:

- Student perception evaluation is appropriate and important

- Staff perception evaluation is appropriate and important.

How to seek evaluation data:

- Use standard HEDC questionnaires, incorporating the IP questions already developed
- Consider the use of pre- and post-IPE activity questionnaires for students
- Consider the use of in-session student debrief, feedback and reflection, to supplement questionnaires
- Consider arranging an independently-run focus group with students towards the end of the learning activity, at least some of the time; guidelines for safe, robust data collection and analysis are available
- Questionnaires may also be appropriate for staff, especially when there are large numbers, but there are few instruments available for use; consideration needs to be given to further exploration and development
- Arrange an independently-run focus group with staff after the end of the learning activity, at least some of the time; guidelines for safe, robust data collection and analysis are available
- In addition, consider using one of the following commonly used instruments to seek data from students:
    - Interdisciplinary Education Perception Scale/IEPS
    - University of the West of England Interprofessional Questionnaire/UWEIPQ
    - Generic Role Perception Questionnaire/GRPQ
    - Interprofessional Collaborator Assessment Rubric/ICAR, Team Skills Scale/TSS
    - Spice-R2
    - But only if it meets your purpose and would add valuable data to help inform/improve your programme (e.g. new learning activity where demonstration of effectiveness is important)
    - (KidSIM Attitudes Towards Teamwork in Training Undergoing Designed Educational Simulation (ATTITUDES) may be appropriate in a simulation setting)
- Report results to the IPE Centre for collation.

Conclusion 29: Evaluation of extended complex immersion clinical placement programmes

The following considerations are important in evaluating extended complex immersion clinical placement programmes:

Who to seek evaluation data from:

- Student perception evaluation is appropriate and important
- Staff perception evaluation is appropriate and important
- Clinical provider and community perception evaluation is appropriate and important.

How to seek evaluation data:

- Use standard HEDC questionnaires, incorporating the IP questions already developed
- Consider the use of pre- and post-IPE activity questionnaires for students
- Consider the use of in-session student debrief, feedback and reflection, to supplement questionnaires
- Arrange an independently-run focus group with students towards the end of the learning activity, at least some of the time; guidelines for safe, robust data collection and analysis are available
- Questionnaires may also be appropriate for staff especially when there are large numbers, but there are few instruments available for use; consideration needs to be given to further exploration and development
- Arrange an independently-run focus group with staff after the end of the learning activity, at least some of the time; guidelines for safe, robust data collection and analysis are available
- Questionnaires may be appropriate for clinical providers, but there are few instruments available for use with this group, so likely these will need to be developed
- Arrange independently-run interviews with some clinical providers, and other stakeholders as appropriate (a focus group might also be an option)
- In addition, consider using one of the following commonly used instruments to seek data from students:
    - Interdisciplinary Education Perception Scale/IEPS
    - University of the West of England Interprofessional Questionnaire/UWEIPQ
    - Generic Role Perception Questionnaire/GRPQ
    - Interprofessional Collaborator Assessment Rubric/ICAR, Team Skills Scale/TSS
    - Spice-R2
    - But only if it meets your purpose and would add valuable data to help inform/improve your programme (e.g. new learning activity where demonstration of effectiveness is important)

    - (KidSIM Attitudes Towards Teamwork in Training Undergoing Designed Educational Simulation (ATTITUDES) may be appropriate in a simulation setting)

- Report all results to the IPE centre for collation.

Conclusion 30: Programmatic evaluation, when IPE curriculum in place

The following considerations are important for programmatic evaluation of an IPE curriculum, once in place:

- Collation and tracking of all IPE learning activity evaluations
- Reporting of collated results – back to IPE learning activity developers, and also to the Division of Health Sciences (through the IPE Centre) and beyond
- Exploration of degree-specific programmatic evaluations already in place
- Dialogue and consideration of IPE elements/competencies
- Health sector and other stakeholder engagement to extend profession-specific programmatic evaluations, over time and as realistic.

8 Concluding thoughts: towards a quality framework for IPE at Otago

This report has investigated the literature and international experience in relation to assuring quality in IPE; and described Otago's current progress towards the development of an IPE quality framework for pre-registration health sciences degree programmes:

It has established:

- IPE is increasingly being integrated into health professional curricula around the world, even in places with so-called 'traditional' health professional training, and with widely varying health systems.

- Our Divisional IPE Centre is making steady progress with supporting and coordinating an increasing number of discrete, intentional IPE learning activities across the health professional degree programme curricula. We have published and presented research and evaluation results from our work. We have a Divisional strategy and governance structure, a small but highly active operations team, an Otago conceptual model, and processes developed to sustain and develop coordinated learning activities, and guidance for assessment and evaluation. The timing is apt for giving concerted attention to a quality framework for IPE in our institution.

- Principles for quality in IPE include:
    - Assuring quality in IPE learning and teaching is essential
    - IPE competencies need to be defined and agreed, and addressed through relevant IPE learning objectives and learning outcomes
    - Best outcomes are most likely to come from an integrated longitudinal curriculum, built from all the IPE learning activities on offer at defined levels/complexity of learning
    - Within an agreed, common and longitudinal IPE curriculum across the health professional degree programmes, IPE learning activities are best incorporated within a system of 'credit equivalence ' to: recognise e.g. levels/complexity of learning, workload hours, learning objectives and learning outcomes; guide students for the purposes of completing the IPE curriculum pathway by some suitable combination of various IP learning opportunities; support the registration and monitoring of IPE learning activities, and the quality assurance of IPE at learning-activity and programmatic levels
    - IP competency domains need to be assessed overall as students progress through the longitudinal curriculum – but not all domains need to be assessed all the time
    - Evaluation at IPE learning-activity and programmatic levels is necessary to support monitoring, continuous improvement and achievement of agreed strategic and systemic goals.

To guide the next phase of development for IPE at Otago – specifically, agreeing a blueprint for quality in IPE over the next five to 10 years - this report has formulated general and detailed conclusions. These will serve as a basis for consulting with stakeholders, and ultimately to inform policy recommendations and decisions for an IPE quality framework at Otago. These recommendations will follow in a shorter, companion document.

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9 Additional material and appendices

9.1 Key points from the IPE Strategic Plan 2016-19

(See Section 1.6)

An overarching goal – the aim of our interprofessional education (IPE) is to prepare all health professional students for deliberately and collaboratively working together to reach a common goal of well-coordinated, high-quality person-centred care.

Supporting all our health professional programmes - to produce graduates who are: good communicators, able to work effectively in health care teams, able to understand their own role and others' roles, provide person-centred care and resolve differences – all core IPE competencies. Specific interprofessional (IP) skills can often only be acquired in an IP learning environment.

Developing a coordinated and collaborative approach - to implement IPE across and beyond the Division of Health Sciences mimics the underpinning philosophy of IPE and practice, moving from a position of fragmentation to a position of Divisional strength, by progressively and seamlessly integrating IPE components into the Health Sciences programmes.

Moving to an integrated approach - our interprofessional learning curriculum throughout the course of the health professional degree programmes should ideally be iterative, integrated and appropriate to the level of learning.

Scaffolding progressive learning - it is useful to consider four levels of progressively more sophisticated IPE activity: Pre-exposure, Exposure, Engagement and Immersion.

Expectations - within 3-5 years, all our students should have the opportunity to undertake, as a minimum, three intentional, formally identified IPE components during the course of their degree: one Exposure level activity (during their foundation years); one Engagement level activity (foundation or early advanced years), followed by at least one Immersion level activity (advanced years).

Quality assurance - these activities should be quality assured, have defined interprofessional outcomes, be assessed and contribute to degree achievement/requirements.

Recognition of serendipitous IPL - multiple serendipitous opportunities for consolidation and extension of interprofessional learning should complement intentional IPE components as they arise on campus, in classrooms, in clinical workplaces and other learning environments.

A planned approach - progressive and seamless integration of IPE components within the health professional degree courses needs to include:

- Cross-division governance, with shared goals

- Building a sustainable ethos of staff and organisational collaboration through ongoing staff development, cross-Division organisation and champion networks
- Identification, development and optimisation of IPE resources (e.g. instructional material, staff expertise, timetabling, space, clinical workplace capacity).

9.2 Otago graduate profiles and IPE competencies

(See Section 1.6.3)

Details in embedded/attached Excel document:

Summary HSci grad profiles.xls

If reading this report in Word: double-click icon above

If reading this report in PDF: View Attachments (click  *icon on screen; or, Go to View / Show/Hide / Navigation Panes / Attachments), double-click the attachment you wish to open*

Note that the detail in this document is best reviewed electronically, rather than in printed format

9.3 IPE Centre work-in-progress

(See Section 3.4)

Table 6: IPE Centre achievements and challenges: snapshot at December 2018

IPE strategic goals 2016-19	**Principal achievements 2016-18**	**Key challenges ahead**
• Progressively and seamlessly integrate IPE into the Health Sciences curriculum • Build a sustainable ethos of staff and organisational collaboration	• Establishment of the IPE Centre and its staffing, from late 2016; and reconfiguration of IPE governance at Divisional and campus levels, early 2017 • Development of conceptual models as a foundation and guide for further IPE policy and curriculum development and implementation • From 2018, development of the Quality in IPE Framework for the comparable assessment, credit, progression and	• Sustaining resourcing for IPE accomplishment at all levels of complexity (exposure, engagement, immersion, complex-immersion) • Embedding interprofessional learning and teaching as steady-state in the health professional programmes at Otago, through a suite of defined IPE activities, progressive learning pathways, clinical placements with integrated interprofessional learning, and IPE competencies that meet

IPE strategic goals 2016-19	**Principal achievements 2016-18**	**Key challenges ahead**
• Identify, develop and optimize IPE resources	records of students' IPE learning components • Coordination, expansion, consolidation and continuation of IPE activities across the Division, especially through grant-funding by the IPE Support Innovation Fund • In 2017, initiation of the IPE Non Communicable Diseases [Smoking Cessation] module for more than 700 'foundation years' students across five Health Sciences professional and dietetics pre-registration programmes; from 2018, routine implementation of the module continues with continuous improvement on the basis of comprehensive evaluation, and in partnership with two health professional programmes from the Otago Polytechnic • Ongoing support to current and planned intentional initiatives in Tairāwhiti, Hawke's Bay, Palmerston North, Wellington, Nelson, Christchurch, Timaru, Dunedin and Invercargill that are all consistent with the Otago conceptual model • From 2018, implementation of common academic year start date for Year 4 Medicine, Physiotherapy and Radiation Therapy students, facilitating joint IPE orientation activities for advanced years students across all programmes at each campus • Bank of online IPE evaluation items offered to aid comparable evaluation of IPE across the Division • Sustained IPE staff development efforts, e.g. through the development of knowledge repositories, training of tutors recruited for IPE teaching, guest lectures and workshops, development in process of IPE module as part of the online Clinical Educators Programme • Student development opportunities offered from time to time – e.g. participation in IPE pilots, IPE conferences • Ongoing extension of IPE networks and partnerships in and beyond the Division, including with external partner institutions as supported by memoranda of agreement	mandatory professional accreditation standards/health professional regulatory requirements • Agreeing mechanisms to monitor IPE's progress and continuous improvement across the Division, including monitoring Divisional progress in addressing aspects of systems alignment which are necessary to sustain gains in IPE innovation and development • Consolidating the evidence-base for IPE at Otago through the outcomes of continuous evaluation and research activities • Progressing Otago's IPE focus to postgraduate learning activities after 2019

9.4 IPE learning activities at Otago

(See Section 4.2 and Section 6.4.5)

Table 7: Summary of IPE learning activities at Otago up to 31 December 2018 (grouped north to south, by level)

Learning activity - current name	**Level**	**Assessment method** (See Note to table, below)	**/ Student numbers (per run, total, # disciplines; *=includes partner institutions/disciplines)** **/ Location** **/ Year(s) offered, frequency per annum**
Tairāwhiti Interprofessional Education Programme	Immersion	Logbook, profession-specific and IP factors assessed over time; group presentation assessed per marking template developed	Approx. 15 per block* 70-80 total pa* (UO x 60-65) Up to 8 disciplines* Tairāwhiti (Gisborne and Wairoa) Annually since 2012; five-week blocks x5 pa
INTERact Hawke's Bay DHB (pilot 2018)	Immersion	Serendipitous IPE socialisation, not assessed INTERact: Clinical IPE in real time (3 days), structured reflection, no formal assessment	30-40 total pa* (UO x 25-30) Up to 7 disciplines* IPE socialisation: all students on site INTERact: 3 per run, where students placed in same clinical area Hawke's Bay 2018 (pilot); INTERact x4 tbc
IPE Cancer Care Midcentral DHB	Immersion	Collaborative care plans, group presentations, not formally assessed	25-30 total pa* (UO x 25) 5-7 disciplines* Palmerston North 2017 (pilot), 2018
IPE Hauora Māori Orientation (Whakawhanaungatanga)	Exposure	No formal assessment	190-200 total pa 3 disciplines Wellington 2016, 2018

Learning activity - current name	**Level**	**Assessment method** (See Note to table, below)	**/ Student numbers (per run, total, # disciplines; *=includes partner institutions/disciplines)** **/ Location** **/ Year(s) offered, frequency per annum**
Involve (IPE long-term conditions management)	Engagement	Profession-specific and IP factors assessed; group presentation assessed	40+ per run* 100+ total pa* (UO x 100+) Up to 6 disciplines* Wellington Annually since 2011 (except 2015); 2016 x1; 2017 x2; 2018 x4
IPE Determinants of Health (pilot 2016)	Engagement	Group presentations of case study, no formal assessment	67 total* (UO x 56) 5 disciplines* Wellington 2016 (pilot)
IPE Teamwork in Prescribing (pilot 2018)	Engagement-immersion	Group presentations of case scenarios, no formal assessment	18 total* (UO x 11) 2 disciplines* Wellington 2018 (pilot)
INTERact Nelson Hospital	Immersion	Clinical IPE in real time (3 days), structured reflection, no formal assessment	3-4 per run* 14 total* (UO x 8) 4 disciplines* Nelson 2017 (pilot), 2018 x4
INTERact Timaru Hospital	Immersion	Clinical IPE in real time (3 days), structured reflection, no formal assessment	2-3 per run 15 total 3 disciplines Timaru Annually since 2015; up to x5 pa
Interprofessional Teams in Complex Health Care Environments	Exposure-Engagement-Immersion	5-6 hours timetabled over 3 sessions - 2x interactive workshops and 1x simulation session; no formal assessment	Approx. 180 total* (UO x 110) 4 disciplines* Christchurch 2016 (feasibility/pilot); 2017 (partial implementation of 2-year programme); 2018

Learning activity - current name	**Level**	**Assessment method** (See Note to table, below)	**/ Student numbers (per run, total, # disciplines; *=includes partner institutions/disciplines)** **/ Location** **/ Year(s) offered, frequency per annum**
IPE Discharge Planning Simulation	Engagement	Simulated case study group work, discharge planning summary produced in session, no formal assessment	40-60 per run* 220 total pa* (UO = 140) Up to 8 disciplines* Christchurch 2018 x4
INTERact Burwood Hospital (pilot 2018)	Immersion	Clinical IPE in real time (3 days), structured reflection, no formal assessment	4-5 per run 9 total Up to 4 disciplines Christchurch 2018 (pilot) x2
Economic Barriers to Health Care	Exposure-engagement	Group presentation assessed for students in programmes whose full year-cohort participates	270 total 4 disciplines Dunedin 2016, 2017
IPE Smoking Cessation Module [from 2019, named IPE Non Communicable Diseases Module]	Exposure-engagement	Online self-directed learning package completed; group presentation assessed per customised marking rubric	650-700+ total Up to 6 disciplines Dunedin 2017, 2018
IPE Working Together in Clinical Pathology (pilot 2018)	Engagement	Group presentations, no formal assessment	18 total 3 disciplines Dunedin 2018 (pilot)
IPE Journey of a Prescription (pilot 2017)	Engagement	SECO-clinic method, no formal assessment	18 total 2 disciplines Dunedin 2017 (pilot)
IPE in Clinical Reasoning (pilot 2018)	Engagement	IPE group work, no formal assessment	110 total 2 disciplines Dunedin 2018 (pilot)

Learning activity - current name	**Level**	**Assessment method** (See Note to table, below)	**/ Student numbers (per run, total, # disciplines; *=includes partner institutions/disciplines)** **/ Location** **/ Year(s) offered, frequency per annum**
IPE Teamwork in Heart Failure Management simulation (pilot 2018)	Engagement	Simulation case scenarios, no formal assessment	17 per run* 34 total* (UO x 22) 3 disciplines* Dunedin 2018 (pilot) x2
Interprofessional simulation training day	Engagement	Simulated case work in groups, no formal assessment	X 15 per run* 130 total* (UO x 35) Up to 4 disciplines* Invercargill Annually since 2015; x8-10 pa

Note to Table 7: Chapter 5 discusses IPE assessment, also providing some context for pilots/activities listed in this table as having no formal assessment at this stage.

9.5 Characteristics of some IPE curricula at other institutions

(See Section 4.9.2.1)

Table 8: IPE curricula stages for pre-registration students (to be completed by registration) – some key examples of stages in longitudinal curricula, and/or curricular frameworks

Institution	**Principal learning stages, in order, for pre-registration students**	**Comments**
Curtin University https://www.curtin.edu.au/ https://healthsciences.curtin.edu.au/studying-health-sciences/interprofessional-education/	3 main levels of learning Novice Intermediate Entry to practice	Well-defined conceptual framework
Dalhousie University https://www.dal.ca/ https://www.dal.ca/faculty/interprofessional-education.html	Introductory IP skills training and mini courses Cased-based and Simulation activities – IP - various Student teams in practice settings	Practice settings imply working with patients/clients in clinical care settings

Institution	**Principal learning stages, in order, for pre-registration students**	**Comments**
Griffith University https://www.griffith.edu.au/ https://www.griffith.edu.au/griffith-health/learning-and-teaching/health-ideas/interprofessional-simulation-based-learning	Phase 1 - Health professions literacy Phase 2 - Simulated IPCP Phase 3 – Real patient-/client-based IPCP	All mandatory, moved away from voluntary participation
Heidelberg University https://www.heidelberg.edu/ https://www.uni-heidelberg.de/courses/prospective/academicprograms/Health_Care_ba_en.html	One day a week over 2+ years 8 key topic areas	University degree runs in parallel with the vocational training courses, components are incorporated into medical and dental degrees. (Mahler et al., 2015)
Linköping University https://liu.se/en	A common start in interprofessional study (7 weeks) to establish a common ground for professional work within health care, A clinically-situated quality improvement scenario (2 weeks) at the intermediate level of the programmes, A clinical placement at a student-led interprofessional training ward (IPTW) (2 weeks) at the final stage of the programmes (Falk et al., 2015)	All mandatory and integrated within professional curricula
Memorial University https://www.mun.ca/ http://www.med.mun.ca/CCHPE/Activities/Programs.aspx http://www.med.mun.ca/getdoc/abdfcb56-8958-4534-982e-62551845cb1a/Interprofessional-Collaborator-Assessment-Rubric.aspx	IPE skills training* Case-based modules* IPPL – IP practice-based learning	* in parallel
Texas Tech University http://www.ttu.edu/ http://www.ttuhsc.edu/interprofessional-education/default.aspx	Online IP modules Practice-based activities	
Vanderbilt University https://www.vanderbilt.edu/ https://www.vumc.org/meharry-vanderbilt/interprofessional-education-ipe-and-inter-institutional-collaborative-learning	Brief immersion Clinically-based IPL* Sim-based IPL* Capstone	* in parallel
Victoria University (Melbourne)	Expose	Introductory

Institution	**Principal learning stages, in order, for pre-registration students**	**Comments**
https://www.vu.edu.au/ www.vu.edu.au/interprofessional-education-program-ipep/contact-ipep https://www.vu.edu.au/interprofessional-education-program-ipep/the-interprofessional-curriculum/immerse-simulated-learning-interprofessional-experience	Immerse Experience	Immersion is often simulation Experience is 'in practice'
UiT The Arctic University of Norway https://en.uit.no/startsida https://uit.no/Content/479945/SFU-s%C3%B8knad%202016%20S%C3%B8knad%20inkl.%20referanser,%20aktivitetsplan%20og%20budsjett.pdf	Inter-base (introduction to IPE) Inter-medio (intermediate IPE activities) Inter-sim (IPE in [emergency] simulation) Inter-prax (IPE in clinical settings) (Iversen et al., 2017)	Default is: all clinical placements are IP at the inter-prax stage
University of British Columbia https://www.ubc.ca/ https://passport.health.ubc.ca/ https://passport.health.ubc.ca/IPE-Activity-Application.aspx	'Integrated curriculum' – 4 discrete topic areas taken over the first 2 years of all participating programmes Senior students - Practice-based, reflective activities – a variety	Students keep a 'log of learning' - the UBC passport
University of Toronto https://www.utoronto.ca/ https://ipe.utoronto.ca/ http://www.ipe.utoronto.ca/sites/default/files/2018%20PIPEs%20Information%20Package.pdf http://www.ipe.utoronto.ca/webform/elective-approval-form-pipes	Exposure Immersion Competence	Successive stages are explicitly worth more points Competence stage involves IPE in patient/client settings

9.6 Individual Teamwork Observation and Feedback Tool (iTOFT)

(See Section 5.4)

The website https://nexusipe.org/advancing/assessment-evaluation/individual-teamwork-observation-and-feedback-tool-itoft provides a full description of the instrument, and resource links.

The basic and advanced versions of the ITOFT are in the embedded/attached pdf document:

Thistlethwaite, iTOFTs, 2015_Basic ar

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9.7 Interprofessional Education Collaborative (IPEC) Competency Self-Assessment Questionnaire

(See Section 5.4.2)

Original IPE questionnaire (2012)

IPEC-Competency-Survey-Instrument-ini

Revised IPEC questionnaire (version 3, 2013)

Dow, IPEC Instrument Revised (v

Key to revised IPEC questionnaire (version 3, 2013)

Dow, IPEC Scoring Key for v.3.docx

Updated IPEC core competencies

IPEC-Core-Competencies-Updated-2016.

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9.8 Student Feedback Rubric, Otago IPE Smoking Cessation Module [IPE Non Communicable Diseases Module] 2018

(See Section 5.4.3)

Details in the embedded document:

Smoking Cessation Rubric for Feedback (

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9.9 Systems for registering IPE activities within institutions

(See Section 6.2)

Table 9: Examples of criteria/standards that learning activities must meet to be approved or accredited by the institution to become part of a IPE 'longitudinal curriculum'

Institution	**Criteria**
Griffith University https://www.griffith.edu.au/ https://www.griffith.edu.au/griffith-health/learning-and-teaching/health-ideas/interprofessional-simulation-based-learning	1. Interprofessional learning activities will be based on sound pedagogical practices, for which there is evidence of effectiveness in optimising the learning of adults 2. Most interprofessional learning activities will include or accurately simulate real-world practice experience 3. Most interprofessional learning activities will include interaction between students from different professional disciplines 4. Interprofessional learning activities will ultimately be incorporated as compulsory components in health professional programmes

Institution	**Criteria**
	5. Interprofessional learning activities will have clear learning outcomes that ultimately will be summatively assessed in health professional programmes 6. Health professional students will participate in interprofessional learning activities at multiple points during their educational programmes and activities at each level will be appropriate to both their competence and their degree of professional identity formation at that point.
Texas Tech University http://www.ttu.edu/ http://www.ttuhsc.edu/interprofessional-education/default.aspx	1. Requirements for approved IPE Learning Activities: • Involvement of two or more professions • Opportunities to learn about, from, and with one another • Significant interactivity between participants. 2. Teaching and learning about interprofessional practice and education is intentionally integrated into the activity. 3. Interprofessional practice and education constructs are targeted with IPE learning objectives, and are also discussed, trained, reviewed, and/or assessed as part of the learning activity. Note: All criteria must be met to register the IPE learning activity.
University of British Columbia https://www.ubc.ca/ https://passport.health.ubc.ca/IPE-Activity-Application.aspx	1. Involves learners from two or more professions (Learners should be pre-licensure students) 2. Includes interactivity (Refer to glossary of terms at the end of the IPE Activity Application Form, available at https://passport.health.ubc.ca/IPE-Activity-Application.aspx) 3. Makes interprofessional learning explicit through learning objectives communicated to students (See the IPE Activity Application Form and the IPE Learning Objective Development Tool, available at https://passport.health.ubc.ca/IPE-Activity-Application.aspx) [Note: a copy of the UBC IPE Activity Application Form is also in the current report under Section 9.11.2]
University of Toronto https://www.utoronto.ca/ http://www.ipe.utoronto.ca/	1. Realistic/authentic learning activities that mirror real-life healthcare teams and healthcare delivery 2. Interactive instead of didactic 3. Facilitators from different professions are educated to provide IPE 4. Explicit IPE learning outcomes 5. Debriefing period after IPE session

Institution	**Criteria**
http://www.ipe.utoronto.ca/sites/default/files/2018%20PIPEs%20Information%20Package.pdf	6. Minimum of three professions involved 7. Case-based learning 8. Frequency of sessions (many interactions across length of training) 9. Students are within similar levels of their professional programmes 10. IPE learning assessment 11. Length of session The intention is that each learning activity, core or elective, will be awarded a number of points as a result of their rating on the criteria. To be incorporated in the IPE curriculum, all learning activities must have two process, and two content, criteria; and a minimum of 15 process, 10 content and 30 points overall.

9.10 Systems for accrediting IPE learning within institutions

(See Section 6.2)

Table 10: Examples of systems for accrediting learning activities within a well-defined curriculum framework

Institution	**Description**	**Comment**
Dalhousie University https://www.dal.ca/	Student requirements – by end of study programme, must complete a total number of IPE learning activities, equal to 2x the number of years of study. So, for a five-year course, this would be ten activities. At least one must be in a practice setting. The number of activities and the standard-setting for the activity is set by the discipline-specific programmes. Students must maintain registration over the course of their degree in a specified 'shell course' in which activities are credited.	Students enrol in two formal university papers that act as 'shell' courses, and successive learning activities are then accumulated within the shell courses. The idea of a shell course that is maintained over the life of the programme is unusual, but appealing.
Texas Tech University http://www.ttu.edu/	Online registry of learning activities via an application and approval process. Approved for a time-specified period (typically one year); must seek renewal	See Section 9.11.1 for a copy of the application form

Institution	**Description**	**Comment**
http://www.ttuhsc.edu/interprofessional-education/default.aspx		
University of British Columbia https://www.ubc.ca/ https://passport.health.ubc.ca/IPE-Activity-Application.aspx	Learning activities are approved, and assigned a points value. All activities must meet the following minimum requirements: 1. Involve two or more professions 2. Make interprofessional learning explicit (e.g. learning objectives communicated to students) 3. Include interactivity among students (e.g. case-based learning; debate; team meeting). Then additional points are awarded depending on things like: duration, number of times of interaction, type of learning, context, level of facilitation, level of reflection, whether assessed or not. Students have an online passport where different learning activities are recorded.	See Section 9.11.2 for a copy of the application form
University of Toronto https://www.utoronto.ca/ http://www.ipe.utoronto.ca/ http://www.ipe.utoronto.ca/sites/default/files/2018%20PIPEs%20Information%20Package.pdf	A system that approves learning activities, awards a points score for the activity, and also requires students to accumulate a certain number of points All learning activities must have two process and two content criteria and a minimum of 15 process, 10 content and 30 points overall Learning Categories: Exposure: 30-45 points, Immersion: 50–60 points Competence: > 60 points	See Section 9.11.3 for a copy of the application form One of the most well-developed and sophisticated, if complex systems so far developed.

9.11 Exemplar application forms to register IP learning

(See Section 6.2)

9.11.1 Texas Tech University

Details in embedded pdf document:

Texas Tech Uni_IPE Registry User Guide (

9.11.2 University of British Columbia

Details in embedded Word document:

UBC activity application form.doc

9.11.3 University of Toronto

The online form can be viewed at:

https://ipe.utoronto.ca/webform/elective-approval-form-pipes

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9.12 Requirements to complete the IPE curriculum: expanded tables

(See Section 6.4.5, **Table 3** and **Table 4**)

Expanded versions of **Table 3** and **Table 4** are provided in **Table 11** and **Table 12** , below).

Table 11: Example of IPE credits applied to current IPE learning activities (expanded)

Learning activity	IPE complexity of learning points	IPE workload points	IPE learning domain points	Points/Credits
Note: IPE credits account for IP learning. They may/may not overlap with other health professional learning objectives and outcomes. For example, In the case of the Tairāwhiti programme, IP learning workload/objectives/outcomes feature alongside Hauora Māori, Rural Health and discipline-specific workload/objectives/outcomes.				
Tairāwhiti Interprofessional Education Programme [TIPE]	3	6	6	15 points 5 credits
INTERact Hawke's Bay	3	2	5	10 points 3 credits
INTERact Nelson	3	2	5	10 points 3 credits
INTERact Burwood	3	2	5	10 points 3 credits
INTERact, Timaru	3	2	5	10 points 3 credits
IPE Cancer Care (Palmerston North)	3	2	5	10 points 3 credits
IPE Hauora Māori Orientation (Whakawhanaungatanga) (UOW)	1	1	3	5 points 2 credits
INVOLVE (IPE Long-term conditions management) (UOW)	2	2	6	10 points 3 credits
UOC Quality and Safety Simulation (Interprofessional Teams in Complex Health Care Environments) (UOC)	2	1	3	6 points 2 credits
IPE Discharge Planning Simulation (UOC)	2	1	6	9 points 3 credits

Learning activity	IPE complexity of learning points	IPE workload points	IPE learning domain points	Points/Credits
IPE Non Communicable Diseases Module (Dunedin)	1	2	5	8 points 3 credits
Economic Barriers to Healthcare (Dunedin)	1	1	5	7 points 2 credits
IPE Working Together in Clinical Pathology (pilot, Dunedin)	1	1	4	6 points 2 credits
IPE Clinical Reasoning pilot	1	1	2	5 points 2 credits
IPE Teamwork in Heart Failure Management (Dunedin)	2	1	6	9 points 3 credits
Interprofessional simulation training day (Invercargill)	2	1	4	7 points 2 credits

Table 12: Examples of IPE credit attainment by student/campus/learning activity, over the course of their degree (expanded)

Exemplar student(s)	IPE activity/credits	IPE activity/credits	IPE activity/credits	Total credits
Note: This table illustrates how students across the range of health professional disciplines and campuses/sites might accumulate IPE credits. Given that Otago's suite of IPE activities is still evolving, some cases are flagged as hypothetical for specific years and/or as envisaged for the future. The complexities of developing IPE to scale equitably across all Otago sites is apparent in these hypothetical cases and/or where exemplar students fall short of prerequisites/credits, e.g.: ** = no immersion opportunity for this student at present* *† = points below recommended minimum at present*				
Palmerston North Radiation Therapy (or Medical or Physiotherapy) student	IPE Hauora Māori Orientation (Whakawhanaungatanga) = 2 credits	INVOLVE = 3 credits	IPE Cancer Care = 3 credits	8 credits

Exemplar student(s)	IPE activity/credits	IPE activity/credits	IPE activity/credits	Total credits
UOW Radiation Therapy student in Wellington/on placement in Auckland	IPE Hauora Māori Orientation (Whakawhanaungatanga) = 2 credits	INVOLVE = 3 credits	-	5 credits*†
UOW Dietetics student	IPE Non Communicable Diseases Module = 3 credits	INVOLVE = 3 credits		6 credits*
UOW Medical student	IPE Non Communicable Diseases Module = 3 credits	INVOLVE = 3 credits	Tairāwhiti Interprofessional Education Programme = 5 credits	11 credits
UOW Medical student (with different timetable/opportunities from student above)	IPE Non Communicable Diseases Module = 3 credits	IPE Hauora Māori Orientation (Whakawhanaungatanga) = 2 credits	-	5 credits*†
UOW Physiotherapy student (who missed orientation day activity owing to illness), or Dietetics student	IPE Non Communicable Diseases Module = 3 credits	- INVOLVE = 3 credits		6 credits*
Nelson Medical student (hypothetical for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Quality and Safety Simulation 2019 = 3 credits	Nelson INTERact 2020 = 3 credits	9 credits
UOC Medical student in Christchurch (hypothetical for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Discharge Planning Simulation (2020) = 3 credits	-	6 credits*

Exemplar student(s)	IPE activity/credits	IPE activity/credits	IPE activity/credits	Total credits
UOC Nursing student (hypothetical for future years)	IPE Quality and Safety Simulation = 3 credits	IPE Discharge Planning Simulation = 3 credits	Burwood INTERact = 3 credits	9 credits
UOC Physiotherapy (or Dietetics) student	IPE Non Communicable Diseases Module = 3 credits	IPE Discharge Planning Simulation = 3 credits	Tairāwhiti Interprofessional Education Programme = 5 credits	11 credits
Dunedin Dentistry student (hypothetical for specific/future years)	IPE Working Together in Clinical Pathology pilot 2018 = 2 credits	-	Tairāwhiti Interprofessional Education Programme 2019 = 5 credits	7 credits
Dunedin Oral Health student (hypothetical for specific/future years)	IPE Working Together in Clinical Pathology pilot 2018 = 2 credits	IPE Non Communicable Diseases Module 2019 = 3 credits	-	5 credits*†
Dunedin Medical student (hypothetical for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Teamwork in Heart Failure Management 2019 = 3 credits		6 credits*
Dunedin Medical student (on placement in Invercargill) (hypothetical for specific/future years)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Teamwork in Heart Failure Management 2019 = 3 credits	Interprofessional simulation training day 2018 = 2 credits	8 credits*
Dunedin Pharmacy/Dietetics student (for 2017)	IPE Non Communicable Diseases Module 2017 = 3 credits	Economic Barriers to Healthcare 2017 = 2 credits	-	5 credits*†
Invercargill Physiotherapy student (for 2017-18)	IPE Non Communicable Diseases Module 2017 = 3 credits	IPE Clinical Reasoning pilot 2018 = 2 credit	Interprofessional simulation training day 2018 = 2 credits	7 credits*

Exemplar student(s)	IPE activity/credits	IPE activity/credits	IPE activity/credits	Total credits
Invercargill Dietetics student	IPE Non Communicable Diseases Module = 3 credits	-	Interprofessional simulation training day = 2 credits	5 credits* †

9.13 Self-report tools to measure IP learning outcomes

(See Section 7.2)

Table 13 Qualitative characteristics of instruments to measure outcomes of interprofessional education (Oates & Davidson, 2015)

Purpose	**Instrument structure**	**Standards for instrument development**	**IPE outcomes***
Interdisciplinary Education Perception Scale (IEPS) (Leucht, Madsen, Taugher, & Petterson, 1990)			
To measure four attitudes important to interdisciplinary settings	18 items; 4 attitude subscales: Professional competency and autonomy (8 items); Perceived need for professional cooperation (2 items); Perception of actual cooperation and resource sharing within and across professions (5 items); Understanding the value and contributions of other professionals/professions (3 items)	Partially met	2a
Readiness for Interprofessional Learning Scale (RIPLS) (Parsell & Bligh, 1999)			
To assess the 'readiness' of students for shared learning	*19 items; 3 subscales: Teamwork and collaboration (9 items clustered into 2 groups: Effective teamworking [6 items],* *Relationships with other professionals [3 items]; Professional identity (7 items: Negative professional identity [3 items], Positive professional identity [4 items]); Roles and responsibilities (3 items)*	*Not met*	*2a*
Attitudes of Shared Learning (ASL) (Forman & Nyatanga, 2001)			
To measure students attitudes to shared learning	60 Likert-type items, 12 open-ended questions relating to experience. Items cover concepts, curriculum issues, statements about interprofessional/shared learning, social aspects of the course, curriculum aspects, problem-based learning; working practice, other professionals' roles, support from institution, logistical aspects	Not met	1, 2a

Purpose	**Instrument structure**	**Standards for instrument development**	**IPE outcomes***
University of the West of England Interprofessional Questionnaire (UWEIPQ) (Pollard & Miers, 2008; Pollard, Miers, & Gilchrist, 2004, 2005; Pollard, Miers, Gilchrist, & Sayers, 2006)			
To measure student self-assessment of communication and teamwork skills, attitudes towards interprofessional learning, students' perceptions of interaction between health professionals, students' perceptions of their relationships with colleagues from their own and other professions	35 items; 4 subscales: Communication and teamwork (9 items); Interprofessional learning (9 items); Interprofessional interaction (9 items); Interprofessional relationships (8 items)	Partially met	2a, 2b
Generic Role Perception Questionnaire (GPRQ) (Makay, 2004)			
To measure the perception of the role of a range of professions	20 bipolar role construct items	Partially met	2a
Interprofessional Socialisation and Valuing Scale (ISVS) (G. King, Shaw, Orchard, & Miller, 2010)			
To measure aspects of the interprofessional socialisation process	*24 items; 3 subscales: Self-perceived ability to work with others (9 items); Value in working with others (9 items); Comfort in working with others (6 items)*	*Standards met*	*2a, 2b, 3*
StudData Questionnaire (Almås & Barr, 2008; Almås & Ødegård, 2010)			
To measure central aspects of interprofessionalism as a construct	16 items; 3 subscales: Need for interprofessional collaboration (6 items); Value of interprofessional education (7 items); Openness to interprofessionalism (3 items)	Not met	2a, 2b
Interprofessional Collaborator Assessment Rubric (ICAR) (Curran et al., 2011)			
To assess (formatively and summatively) a learner's achievement of stated interprofessional collaborator competencies	6 competencies each with a number of dimensions (dims) and behavioural indicators (BIs): Communication (2 dims, 7 BIs); Collaboration (3 dims, 4 BIs); Roles and responsibilities (4 dims, 7 BIs); Collaborative person-centred approach (4 dims, 4 BIs); Team functioning (3 dims, 5 BIs); Conflict management/resolution (3 dims, 4 BIs)	Partially met	2b, 3
KidSIM Attitudes Towards Teamwork in Training Undergoing Designed Educational Simulation (ATTITUDES) (Sigalet, Donnon, & Grant, 2012)			
To measure student perceptions of and attitudes toward IPE,	30 items; 5 subscales: Communication (8 items); Relevance of IPE (7 items); Relevance of simulation (5 items); Roles	Partially met	1, 2a, 2b

Purpose	**Instrument structure**	**Standards for instrument development**	**IPE outcomes***
teamwork and simulation as a learning modality	and responsibilities (6 items); Situation awareness (4 items)		
* For classification of IPE outcomes, see Table 5, Section 7.2			