

Public Health Workforce Development Models: Literature Scan, Review & Synthesis

A report commissioned by Peel Public Health

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Key Take Home Messages

1. There is very little research available in the area of public health workforce development, particularly in a Canadian context, indicating the cutting edge nature of this topic.
2. Nevertheless, ten (10) models of workforce development were found in the international literature, of these, three (3) models held the most promising elements with which to combine in a expanded model.
3. The following are the key elements which emerged from our analysis as being critical to integrate into a conceptual model of best practices in public health workforce development:

Three main processes: workforce planning, human resource management and workforce capability development.

Two key inputs to these processes: university and college preparation for public health professionals and health system supports for workforce management.

Organizational competencies and a learning organization culture are necessary enablers that undergird the entire system.

Executive Summary

Peel Public Health's (PPH) vision is to be one of the leading health units in Canada, where fundamental public health activities of assessment and surveillance, health protection and promotion, disease prevention and reduction of disparities are the common goals. This vision depends fundamentally on its workforce; a workforce whose drive, resiliency and creativity shape and deliver the goals of the organization. To this end, PPH contacted researchers affiliated with the Canadian Institutes of Health Research/Health Canada Chair in Health Human Resource Policy and with the Ontario Health Human Resources Research Network to prepare an environmental scan and synthesis of the literature of *public health workforce development* models.

The goals of the review were:

- To conduct a scan, review and synthesis of the literature on conceptual models of public health workforce development.
- To describe relevant workforce development models and to identify components that can be integrated into a workforce development strategy for the purpose of building a framework to develop human resources at Peel Public Health.
- To provide recommendations that will be used to shape internal initiatives to position Peel Public Health as an agency where employees have necessary competencies, skill development and career progression opportunities.

The main questions to be addressed include:

- What are the relevant conceptual models of public health workforce development that Peel Public Health can choose from to advance its infrastructure priority?

- Which relevant model would be suitable for Peel Public Health to use in its workforce development?

Background/contingent questions included:

1. What defines workforce development; what should it include and exclude?
2. What should be the goals of workforce development in public health?
3. What are the points of intervention to begin operationalizing public health workforce development?
4. Who are partners (internal and external) that should be involved in public health workforce development?
5. What are the markers of an efficient workforce development strategy?
6. What role should the essential functions of public health and public health core competencies play in framing workforce development?

To address the objectives of this review and synthesis of the public health workforce development literature, we employed established triangulated methods of a scoping review. The broad nature of a scoping review involving both the published and grey literatures was the preferred type of review to capture all forms of evidence. We employed five main search strategies to obtain relevant published and grey literature for our scoping study: 1) We conducted a typical academic database search pertinent to public health workforce development; 2) Members of PPH contributed relevant literature; 3) We targeted two key journals - *Journal of Public Health Management Practice* & *Canadian Journal of Public Health* - for relevant articles; 4) We scanned the reference lists of all papers; and 5) We searched websites of

international research and professional organizations, and national, provincial and territorial governments through targeted internet searches.

The search of published academic literature yielded 39 relevant articles and the internet searches yielded an equal number of grey literature sources for a total of 78 sources. In terms of the contingent questions, most of the literature addressed how to operationalize public health workforce development. This was followed by a half dozen sources on the role of essential functions/core competencies of public health and the internal and external partners who should be involved in public health workforce development. Few sources address the definitions of workforce development and perhaps not surprisingly, only a couple articles addressed the goals of workforce development in public health and the markers of an efficient workforce development strategy. **These results should be considered indicative of a cutting edge field where there presently exists very little research and therefore evidence for promising practices in public health workforce development.**

We found a variety of definitions of workforce development relevant to the public health sector. Staron (2008) provides one of the most comprehensive definitions:

“Workforce development is a holistic concept that integrates workforce analysis and planning, human resource management and capability development to strengthen organization success by aligning the workforce to both current and future service demands.”

We found support for the argument that the responsibility for public health workforce development is a partnership between the public health organization and the public health worker. A variety of different outcomes or markers of an effective workforce development

strategy revealed include workforce competency, include changing practices, new partnerships, new and improved programs and services, improved client satisfaction, system improvement and improved individual and population health outcomes.

With respect to the main question addressed by this review regarding conceptual models of public health workforce development, we identified in our interim report a total of ten potential conceptual models to be considered for further exploration and development. Following our consultation with representatives from PPH, three of these ten models were identified for further exploration and development. These included the *Conceptual Model for Workforce Development* (Kennedy & Moore, 2001), the *Logic Model for Public Health Workforce Development* (Cioffi et al., 2004), and the *Workforce Development Model* (Staron, 2008). Subsequent to these discussions, we conducted a targeted search for articles that either provided criticisms or highlighted the promising features of the three models that were selected. Although there were general references made to the articles, **there was no specific mention of the applicability or criticisms of the models again, indicative of the cutting edge nature of the requested review.**

From these three models, promising elements were identified and categorized according to inputs, activities and outputs and applied to an embellishment of the Staron (2008) *Workforce Development Model* which also included some key Peel-relevant workforce development aspects. The base of the model included the teasing apart of workforce planning, human resource management and workforce capability development. Within each of these core process elements, we further tease apart specific activities and outputs. We took from the Cioffi et al. 2004 model the more clearly delineated structures/inputs to which we have added the key contextual inputs relevant to a Peel, Ontario and Canadian context (e.g., the public health core

competencies). Further, the items that remain in this revised model were categorized in a semi-chronological order and reworded to reflect a more action-oriented approach.

A series of recommended actions for PPH were developed.

With respect to Workforce Planning:

- to assess HR supply and insofar as is possible, demand, through targeted needs assessments
- to profile the demographics and the skills and competencies of the current workforce
- undertake key recruitment priorities to help address the needs identified
- undertake a review of current student placements and build a strategic vision of student placements within PPH
- liaise with local training programs to provide feedback on the skill mix needed

With respect to Human Resources Management:

- Assess workforce needs in terms of the public health core competencies.
- Revise job descriptions to better reflect the skill of the existing workforce and any continuing professional development planned or already in progress vis-à-vis the core competencies
- Develop a recruitment plan to address some of the gaps identified in the analysis above.
- Develop performance management/retention initiatives with set targets and a system of recognition and rewards. This will feed into individual career and succession planning.
- Develop a supportive learning organizational culture through a range of work arrangements, policies and leadership initiatives

With respect to Workforce Capability Development:

- Promote enhanced skills and competencies through continuing professional development.
- Undertake a training needs analysis and implementation plan.
- Foster a culture of knowledge sharing and networking and the development of innovative practices.

1 Introduction

Peel Public Health's vision is to be a leading health unit in Canada, where fundamental public health activities of assessment and surveillance, health protection and promotion, disease prevention and reduction of disparities are the common goals. This vision depends fundamentally on its workforce; a workforce whose drive, resiliency and creativity shape and deliver the goals of the organization. It is important not only that the goals and performance of individual employees align with those of PPH and the provincial and federal governments, but also that PPH in turn nourishes individual goals by encouraging continuous learning that enable them to enhance their skills and by allowing flexibility that enables them to take on new challenges or new roles; goals that encompass both personal and professional development.

Researchers affiliated with the CIHR/Health Canada Chair in Health Human Resource Policy and with the Ontario Health Human Resources Research Network were contacted to prepare an environmental scan and synthesis of the literature of *public health workforce development* models on behalf of the Medical Officer of Health and the Manager of Education and Research within Peel Public Health (PPH). PPH employs over 600 individuals, in a variety of jobs/roles. There are nearly 20 categories with a range in numbers of people in categories from epidemiologists (3) to Public Health Nurses (over 200) (*see Table 1*). This diversity requires a comprehensive approach to workforce development at the practitioner and organizational levels. PPH was particularly interested in a critical and evidence-based examination of conceptual models of workforce development relevant to public health.

1.1 Goals of Review:

- To conduct a scan, review and synthesis of the literature on conceptual models of public health workforce development.
 - The conceptual models should include important concepts that are geared towards the ideal unique requirements for Peel Public Health workforce; one that is *professionally competent, highly motivated, multilingual and culturally sensitive to ethnic groups* and one that hones their vision of maintaining the role as the leading public health unit in Canada.
- To describe relevant workforce development models and to identify components that can be integrated into a workforce development strategy for the purpose of building a framework to develop human resources at Peel Public Health.
 - The following criteria will be considered in assessing the relevance of workforce development models: *comprehensiveness, compatibility with current Canadian public health workforce initiatives, transferability to the Canadian context, and practicality.*
- To provide recommendations that will be used to shape internal initiatives to position Peel Public Health as an agency where employees have necessary competencies, skill development and career progression opportunities.

Table 1: Peel Public Health Workforce

Job Titles	Chronic Disease and Injury Prevention	Family Health	Environmental Health	Communicable Disease	Office of the MOH	Totals
MOH					1	1
Director\AMOH	1	1	1	1	3	7
Manager	5	4	3	4	2	18

Supervisors	15	16	9	16		56
Admin. Support	23	20	9	53	5	110
Public Health Nurses	59	102		67		228
Public Health Inspector			62			62
Health Promotion Officers	24	2	3	6		35
Family Visitors		25				25
Research and Policy Analysts	6	3	4	6	1	20
Dental Hygienist	10					10
Data coordinator			1	6	2	9
Family Resource Worker	9					9
Community Development Worker	4	2		3		9
Registered Dietician	8	1				9
Nutritionist	5	0				5
Health Outreach Worker				5		5
Health Analyst			1	3	2	6
Dental Educator	8					8
Dental Case Aide	7					7
Epidemiologist					3	3
Total	184	176	93	170	19	642

1.2 Research Questions:

Main Questions:

- What are the relevant conceptual models of public health workforce development that Peel Public Health can choose from to advance its infrastructure priority?
- Which relevant model would be suitable for Peel Public Health to use in its workforce development?

Contingent Questions:

1. What defines workforce development; what should it include and exclude?
2. What should be the goals of workforce development in public health?
3. What are the points of intervention to begin operationalizing public health workforce development?
4. Who are partners (internal and external) that should be involved in public health workforce development?
5. What are the markers of an efficient workforce development strategy?
6. What role should the essential functions of public health and public health core competencies play in framing workforce development?

1.3 Current Workforce Development Considerations for Peel Public Health¹

Workforce Planning

Workforce or HR planning can be defined as the systematic identification and analysis of what an organization is going to need in terms of the size, type, and quality of workforce to achieve its objectives.² Health Human Resource planning is presently heavily influenced by concerns over workforce shortages in light of aging both of the population and the health care workforce.

Peel Public Health is presently in the process of ascertaining whether the dire predictions of workforce shortage are a real issue for Peel, with its GTA location and diverse community. To

¹ This is a revised version of the document Bev Bryant forwarded which helps to provide context for the review.

² <http://www.businessdictionary.com/definition/workforce-planning.html>

date, there have been little difficulty in filling vacant positions but anecdotally it has been noted that it is sometimes been difficult to hire certain cadres such as Health Promotion Officers. There is some interest in conducting a full assessment of its current workforce, assessing all job descriptions and competency requirements, and then doing a current and projected gap analysis. Other possible initiatives to address an aging workforce will be to develop some useful policies and retention practices that will allow these knowledgeable employees to continue to contribute to the organization, but in perhaps limited and more flexible ways.

University Relations and Student Placements

Workforce planning involves the maintenance of good relations with the educational institutions that provide the organization with its new workers. University relations, particularly with respect to student placement, are a key priority for Peel Public Health. Student placement opportunities have grown organically and depend mostly on the interest and willingness of the team supervisor and their managers; as a result, there is no comprehensive view of the students currently supported. Having students continually circulating through provides energy to the system and is usually a rewarding experience for all. This will require administrative resources.

Cultural Sensitivity and Diversity

Peel region incorporates tremendous ethnic diversity and as a result, Peel Public Health must reflect that diversity in its staff. This can be enhanced through student placements and retaining them post graduation. This is a strategic priority in the 10 year plan and workforce development will need to work closely with the leads of this initiative to ensure synergy.

Learning Organization

Responsive to a Culture of Change

In addition to the changes to the composition of the public health workforce, there are a range of changes in policy, changes in opportunities, changes in administrative details and ideally change into a more horizontal, adaptable workforce. Ensuring responsiveness to this culture of change is critical as Peel Public Health endeavours to be a 'learning organization'. Central to this goal will be the adoption and adherence to a change management framework that will guide its efforts. It will be essential to create a sense of urgency for this work, build a strong vision, share the leadership, creating small pockets of early adopters where innovation will be sparked and nourished.

Continuous Professional Development

A key element of a learning organization is continuous workforce development. A critical issue in this regard is the responsibility for CWD between the work organization and worker. On the organizational side, the question is how to offer training opportunities that will engage a diverse group of workers. This raises the question of the core competencies and the routes in which Peel Public Health should encourage workforce development in this regard. With respect to employees, PPH will need to address HR policy issues around some of the professional development that individuals undertake on their own. Peel Public Health has a substantial number of workers who have or are in the process of taking continuing education through various university programs and the skills enhancement program through PHAC. Judicious decisions will continue to be made in order to ensure that that valuable training and development dollars are used to achieve the maximum effect.

2 Methods

To address the objectives of this review and synthesis of the public health workforce development literature, we employed established triangulated methods of a scoping review. The broad nature of a scoping review involving both the published and grey literatures was the preferred type of review to capture all forms of evidence. We also concentrated on relevant international literatures of all types including Australia, Canada, Cuba, Europe, France, Germany, Ireland, Latin America/Caribbean, Netherlands, New Zealand, South Africa, Switzerland, United Kingdom and the United States. In keeping with the tenets of scoping reviews, we did not evaluate the methodological quality of papers.

2.1 Search Strategies & Results

We employed five main search strategies to obtain relevant published and grey literature for our scoping study:

Academic Literature (see Appendix 1)

1) We conducted a typical academic database search including MEDLINE/PubMed, CINAHL, ABI/INFORM Global, Ovid Health Star and Google Scholar electronic databases using applicable Mesh Headings and free text key words pertinent to public health workforce development.

2) Members of Peel Public Health contributed relevant literature from their personal libraries and these were explored for articles in their reference lists and also for articles that cited these sources.

3) We targeted two key journals - *Journal of Public Health Management Practice & Canadian Journal of Public Health* - for relevant articles. This was intended to avoid omitting recently published papers not captured by the database searches.

4) We scanned the reference lists of all papers included for data extraction, looking for relevant papers that were not captured in our original search.

Grey Literature (see Appendix 2)

5) We searched websites of international research and professional organizations, and national, provincial and territorial governments through targeted internet searches. Peel Public Health has specifically requested a search of the NCOSS Council of Social Services of New South Wales.

Inclusion/Exclusion Criteria

Our inclusion/exclusion criteria included published and grey literature limit to last 15 years (did not exclude French language articles). Preliminary inclusion into the database was based on abstract description and alignment with main questions and contingent questions. When unsure about alignment based on the abstract, we proceeded with a review of the full text of the article.

Search Results

The search of published academic literature yielded 58 relevant articles (see first sheet of Appendix 3 Annotated Bibliography) and the internet searches yielded 39 4 grey literature sources (see second sheet) for a total of 97 sources. In terms of the contingent questions, most of the literature addressed how to operationalize public health workforce development (over 20 articles in both academic and grey literatures) (see Table 2). This was followed by a half dozen sources on the role of essential functions/core competencies of public health and the internal and

external partners who should be involved in public health workforce development. Few sources address the definitions of workforce development and perhaps not surprisingly, only a couple articles addressed the goals of workforce development in public health and the markers of an efficient workforce development strategy. **These results should be considered indicative of a cutting edge field where there presently exists very little research and therefore evidence for promising practices in public health workforce development.**

Table 2: Academic and Grey Literature Sources that address Contingent Questions

Contingent Question	Academic	Grey	Total
1. What defines workforce development; what should it include and exclude? And/or conceptual workforce development model	12	6	18
2. What should be the goals of workforce development in public health?	9	4	13
3. What are the points of intervention to begin operationalizing public health workforce development?	19	4	23
4. Who are partners (internal and external) that should be involved in public health workforce development?	8	3	11
5. What are the markers of an efficient workforce development strategy?	1	0	1
6. What role should the essential functions of public health and public health core competencies play in framing workforce development?	9	12	21

With respect to the main question addressed by this review regarding conceptual models of public health workforce development, we identified in our interim report a total of ten potential conceptual models to be considered for further exploration and development (*see Table 3*).

Following our consultation with representatives from Peel Public Health, three of these ten models were identified for further exploration and development (*italicized in Table 3*). Subsequent to these discussions, we conducted a targeted search for articles that either provided criticisms or highlighted the promising features of the three models that were selected using both Google and Google Scholar (utilizing its forward search capabilities in particular). Although there were general references made to the articles, there was no specific mention of the applicability or criticisms of the models. For example, the article by Cioffi et al 2004 was mentioned on the New Hampshire Public Health website but no direct reference to the model.

Table 3. Conceptual Models of Workforce Development (*in chronological order*)

Title	Source	Context
<i>Conceptual Model for Workforce Development</i>	<i>Academic literature, (Kennedy & Moore, 2001) Figure 3, pg 20.</i>	<i>Discussed in more detail below</i>
Intelligence Framework for Problem-based Workforce Development in Public Health Nutrition	Academic literature, (Hughes, 2003) Figure 1, pg 600.	This framework has been developed “by drawing on the peer-reviewed and non-peer reviewed workforce development literature, with particular emphasis on identifying the intelligence needs” for public health nutrition in Australia.
Essential Service-based Training Model for Public Health	Academic literature, (Potter et al., 2003) Figure 1, pg 203.	The Pennsylvania and Ohio Public Health Training Center designed the essential service-based training model for public health to assess and evaluate the training needs in the 500-worker health department serving Allegheny County in Pennsylvania. This model was to ensure synergy among the separate goals of individual learning, improved job performance, and strategic organizational development.
<i>Logic Model for Public Health Workforce Development</i>	<i>Academic literature, (Cioffi et al., 2004) Figure 3, pg 188.</i>	<i>Discussed in more detail below</i>
New South Wales Health Capacity Building	Grey Literature (NCOSS on Workforce Development Models, 2007) Table 1, pg 4.	Five models were obtained from a paper that looks at a “selection of models and approaches to workforce development that are of relevance to New South Wales Department of Health non government community sector” of Australia. The paper provides a “brief summary of existing options to assist in developing a preferred

Framework		model for the development of a workforce development strategy” for their sector.
New South Wales Health Capacity Building Framework	Grey Literature (NCOSS on Workforce Development Models, 2007) Figure1, pg 6.	This model is the “New South Wales Health Department capacity building framework” which attempts to include workforce development “as one of five major components of capacity building. This model acknowledges the contribution of partnerships, resource allocation, organisational development, and leadership, as well as workforce development to determine the capacity of services and network of service.”
A ‘Strategic Imperatives’ Model	Grey Literature (NCOSS on Workforce Development Models, 2007) Figure 2, pg 8.	“This model was developed by the New Zealand Ministry of Health and addresses systems and organizational strategies to produce five ‘strategic imperatives’ for workforce development”.
A ‘Systems, Current and Future’ Approach	Grey Literature (NCOSS on Workforce Development Models, 2007) Table 2, pg 9.	This model was developed by the National Centre for Education and Training on Addiction of Australia and includes the following key areas: 1) Workforce planning and development, 2) Quality of evidence-based practice at all levels linked to governance and credentialing, 3) Broad trends such as globalization, technology, changing knowledge and expectations, labour costs, 4) Education and Training, 5) Service delivery developments, 6) Recruitment and retention, 6) Workforce capacity, 7) Indigenous workforce development.
A ‘Team/ Individual Strategic’ Approach	Grey Literature (NCOSS on Workforce Development Models, 2007) pg 10.	This model was developed by the Government of Scotland “The National Strategy for the Development of Social Service Workforce in Scotland, 2005” and is a five year plan for the social services workforce which “emphasizes support and attention to individual workers and teams, and the relationship of the workforce development to the needs of clients and unpaid carers”.
<i>A Workforce Development Model</i>	<i>Grey literature, (Staron, 2008 on Workforce Development- a whole-of-system model for workforce development)</i>	<i>Discussed in more detail below</i>

2.2 Limitations

There are a range of limitations to the methodological approach that we undertook, largely related to the relatively short time frame we had to devote to the review (eight to nine weeks) which concluded during the winter holiday break. A scoping review is typically augmented with information garnered from targeted interviews with key stakeholders. This was not possible given our time frame. Despite these limitations, the literature that we have synthesized does

reveal some important insights for how to proceed with public health workforce development in an informed and evidence-sensitive manner. Some articles of potential interest that were retrieved by PubMed were not accessible and therefore not included in the annotated bibliography but have been included in the reference section for Peel's consideration. These are included as "Maybes" in the flow chart.

We begin first with some background information addressing the contingent questions from the literature to which we situate the three most promising models of public health workforce development. We pull together the most promising elements into an expanded model that emphasizes the key workforce development considerations for Peel Public Health and identify some of the 'quick wins' that could be pursued.

3 Background to Public Health Workforce Development (PHWD)

Answers to the contingent questions provide some important background context to our analysis of the conceptual models of public health workforce development. We begin with how to define workforce development, how this is applied to the public health workforce, and we conclude with some key outcomes or indicators of successful workforce development.

What defines workforce development; what should it include and exclude?

There are a variety of definitions of workforce development relevant to the public health sector. Staron (2008) provides one of the most comprehensive definitions:

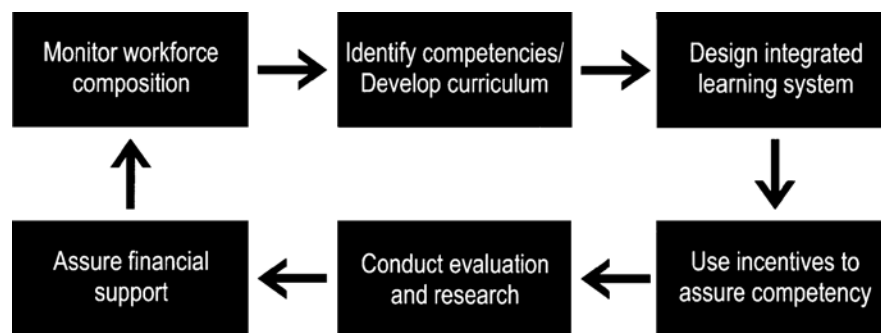
“Workforce development is a holistic concept that integrates workforce analysis and planning, human resource management and capability development to strengthen organization success by *aligning the workforce to both current and future service demands*. ... It covers a wide range of key activities, strategies and policies impacting on individuals and teams, the organization in which they operate, the systems that surround them, as well as on the broader industry, regional business and community environment” (Staron, 2008, emphasis added)

The definition from Roche (2001) elaborates on additional dimensions:

“At the most general level, workforce development includes policies, guidelines, management support and supervision and the legitimization of initiatives through organizational and structural supports. Its primary aim is to facilitate and sustain developments in the ____ workforce. *It does this at different levels, targeting structural, organizational and individual factors*”. (pg 6; emphasis added)

These levels include: systems and environments that support the full range of workforce development strategies such as “legislation, policy, funding, recruitment and retention, resources, support mechanisms and incentives;” ensuring opportunities for individual workers to develop skills, knowledge and attitudes which can “include formal education, training, workplace training, mentoring, on-the-job learning, on-line learning and best practices guidelines” are of high quality, effective and well utilized; and finally influencing the future workforce, ensuring the right number and mix of skilled workers for the future (pg. 7).

Figure 1: Six strategic elements for public health workforce development (Cioffi et al, 2004)



As illustrated in Figure 1 above, Cioffi et al. (2004, pg. 188) identify six elements that should be included in any strategic public health workforce development.

What should be the goals of workforce development in public health?

Part of the process of identifying the goals of public health workforce development is to understand the current challenges facing public health human resources. As noted in the PHAC report, *Building the Public Health Workforce for the 21st Century*, “The public health sector is facing the same human resources planning challenges as the rest of the health system: shortages in key professions, an aging workforce, ... [and] the need for ongoing learning and “retooling” to keep pace with new knowledge and changes in practice, and a lack of information on the

workforce to inform planning” (pg 1). There are, however, some challenges unique to public health which include:

- On the demand side, there is a limited capacity to assess the needs of a population/ community in order to determine the right number and mix of public health services and providers to meet their needs. Beyond this, it is noted that “public health programs are often asked to respond to new or emerging health needs ... with little assessment of the human resources required.”
- On the supply side, a “broader range of regulated and non-regulated providers than most other parts of the health care system” to take into consideration and related to this, the highly interprofessional nature of public health practice where “a number of public health functions can be performed by a variety of practitioners”
- With respect to workforce development, it has been noted that “there are few dedicated public health education and continuing education programs” and “training capacity is not evenly distributed across the country.” Moreover, the sector has limited ability to attract new workers because of the “lack of clinical field placements/practica in public health”. The public health sector’s “ability to retain providers is limited by lack of career development options.” (*excerpted from pg. 1 & 2*)

The goals of workforce development in public health must explicitly address these unique challenges.

Who are partners (internal and external) that should be involved in public health workforce development?

Internally, as has already been identified above, the responsibility for public health workforce development is a partnership between the public health organization and the public health worker. With respect to the responsibilities of the organization, the creation of a climate that recognizes and rewards continued professional development and competency achievement is essential. Workers also have responsibilities regarding continuous professional development which are best supported through organizational recognition and acknowledgement of how this will ultimately improve the programs and services delivered by the work organization.

Externally, the PHAC report *Building a Public Health Workforce* identifies how effective implementation will require collaboration among “the provincial/territorial agencies responsible for public health (e.g., Ministries of Health and Education, regional and local health authorities, training institutions, regulatory bodies), federal agencies (i.e., the Public Health Agency of Canada, Health Canada, Human Resources Development Canada, and research agencies such as the Canadian Institutes of Health Research and the Canadian Institute for Health Information), municipal governments that fund or deliver public health services, and non-governmental organizations that hire public health providers to implement prevention and population health promotion programs in some communities.” (p. v)

What role should the essential functions of public health and public health core competencies play in framing workforce development?

As noted above, public health practice is highly interprofessional where various public health workers have overlapping skills and scopes of practice. It is for this reason that the recent focus

has been on a competency-based – rather than a discipline or profession-based – workforce development approach. As noted on the PHAC website on Core Competencies,³

“Core competencies are the essential knowledge, skills and attitudes necessary for the practice of public health. They transcend the boundaries of specific disciplines and are independent of program and topic. They provide the building blocks for effective public health practice, and the use of an overall public health approach.” (*see Appendix 4*)

As we discuss in the models below, public health competencies are identified as a key facilitator of effective public health workforce development and ultimately to a highly competent and expert workforce.

What are the markers of an efficient workforce development strategy?

A variety of different outcomes or markers of an effective workforce development strategy are considered in the academic and grey literatures. In the Kennedy and Moore (2001) model, the prime outcome is considered to be a Competent Workforce. Similarly, in the *Logic Model for Public Health Workforce Development* developed by (Cioffi et al., 2004), workforce competency is identified as a key outcome. This includes worker knowledge, attitudes and behavior; skills change; and a sense of capacity, self-efficacy and empowerment. This model also includes other outcomes of effects of workforce development which includes program/organization improvement, system improvement and improved individual and population health outcomes. In the *Workforce Development Model developed* by Staron (2008) an effective workforce development plan will result in a highly skilled workforce with increased creativity and

³ <http://www.phac-aspc.gc.ca/ccph-cesp/stmts-enon-eng.php>

innovation. More immediate outputs identified in the Staron model include changing practices, new partnerships, new and improved programs and services and improved client satisfaction.

According to the PHAC *Building a Public Health Workforce*, collaborative public health workforce planning and development based on its proposed framework and competencies are intended to contribute to the following outcomes:

- A better understanding of the population's public health needs and greater capacity for needs-based PHHR planning.
- A stable public health workforce with the skills and competencies to meet the population's public health needs
- A skills-based model for public health service delivery which will result in more effective use of public health human resources.
- More people choosing careers in public health.
- Lower recruitment, orientation and absenteeism costs.
- Greater consistency in public health programs and services across the country.
- Greater capacity to respond to health emergencies and still maintain essential public health services. (p. 10-11)

4 Promising Conceptual Models of Public Health Workforce Development

4.1 Conceptual Model for Workforce Development (Kennedy & Moore, 2001)

Figure 2. Conceptual Model for Workforce Development

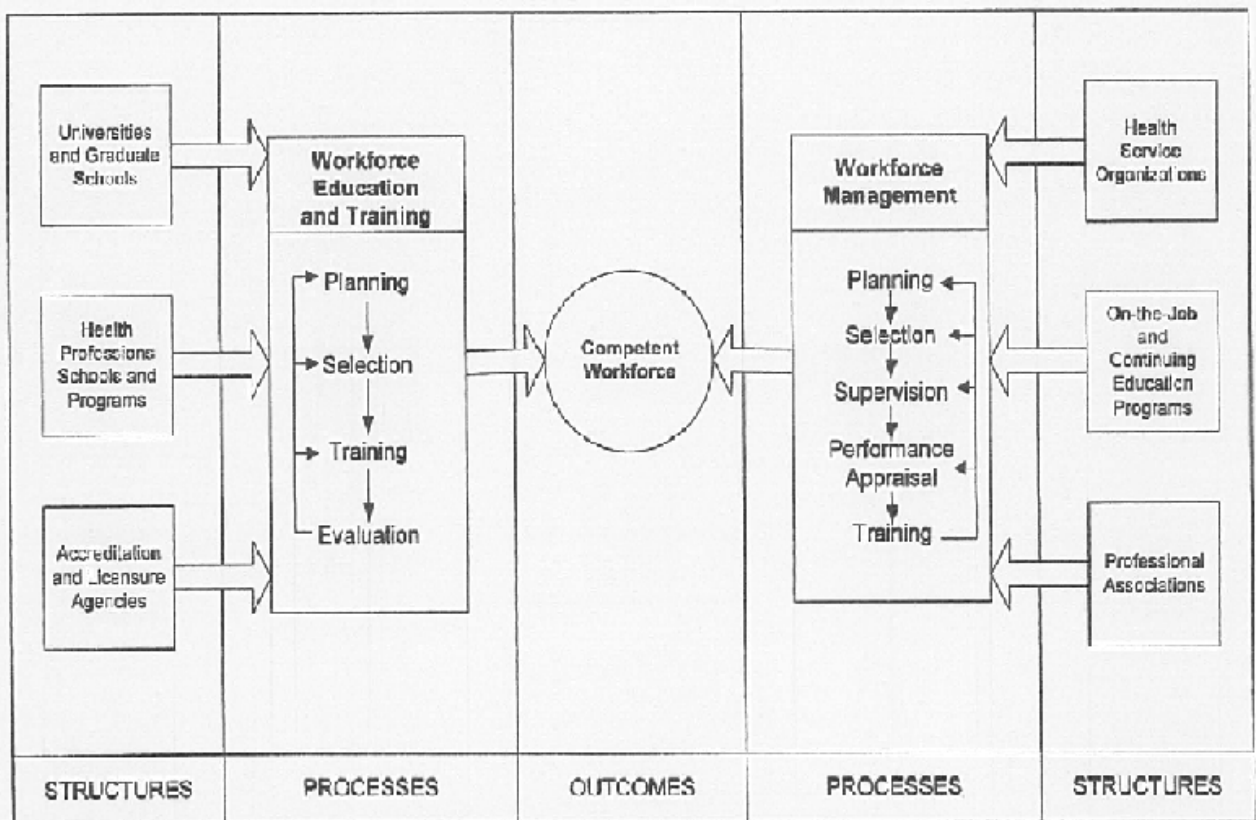


Figure 3. Conceptual Model for workforce development. Source: Data from F.T. Moore, *Functional Job Analysis: Guidelines for Task Analysis and Job Design*, World Health Organization, September 1999.

Context: This model was obtained from a document entitled “Functional Job Analysis: Guidelines for Task Analysis and Job Design” (Moore, 1999) developed for the World Health Organization as a way to link a typical workforce model to existing public health system models. According to this model, workforce competence is the key outcome which is a result of two

component processes: workforce education and training and workforce management. There unfortunately is not specific reference to the methodology used in developing this model.

Promising elements of this model include:

- Separation of two key elements of workforce development – workforce education/training and workforce management:
 - 1) Workforce education and training processes are described as involving and primarily governed by “educational, accrediting, and credentialing institutions. Community and institutional level planning processes identify workforce needs and priorities in terms of numbers, distribution, and qualifications. Training institutions recruit and select students and develop and administer programs of instruction” (pg. 18).
 - 2) Workforce management processes are described as involving the “planning, acquisition, and development of personnel needed to achieve organizational success. These processes are driven by the type of work organization involved, the provision it makes for career development, and professional associations to which workers and work organizations relate” (pg.19).
- Workforce competence is regarded as the key outcome of the two linked processes. For example, it is stated that:

“Competent supervision, based on well-defined job descriptions and performance standards, provides feedback on performance, detects needs for additional training, and offers encouragement and recognition necessary to maintain morale. These processes take in place in a specific employment setting with its own compensation system, working conditions, and career advancement opportunities. If new

competencies acquired by workers are to be institutionalized successfully in the workplace, they must be supported and reinforced by all these features” (pg 20).

- The inclusion of a logic model-like structures (akin to inputs), processes (akin to activities) and outcomes is also a promising element of this model.
- The paper this model is based on also includes a “work-doing” system which acknowledges the importance of three interacting components with the central purpose of achieving productivity:
 1. The work organization: “purpose, goals, objectives, resources, and constraints”
 2. The work: “functions, activities, tasks and functional requirements for each task”,
 3. The worker: “characteristics include qualifications, experience, education and training”(pg18)

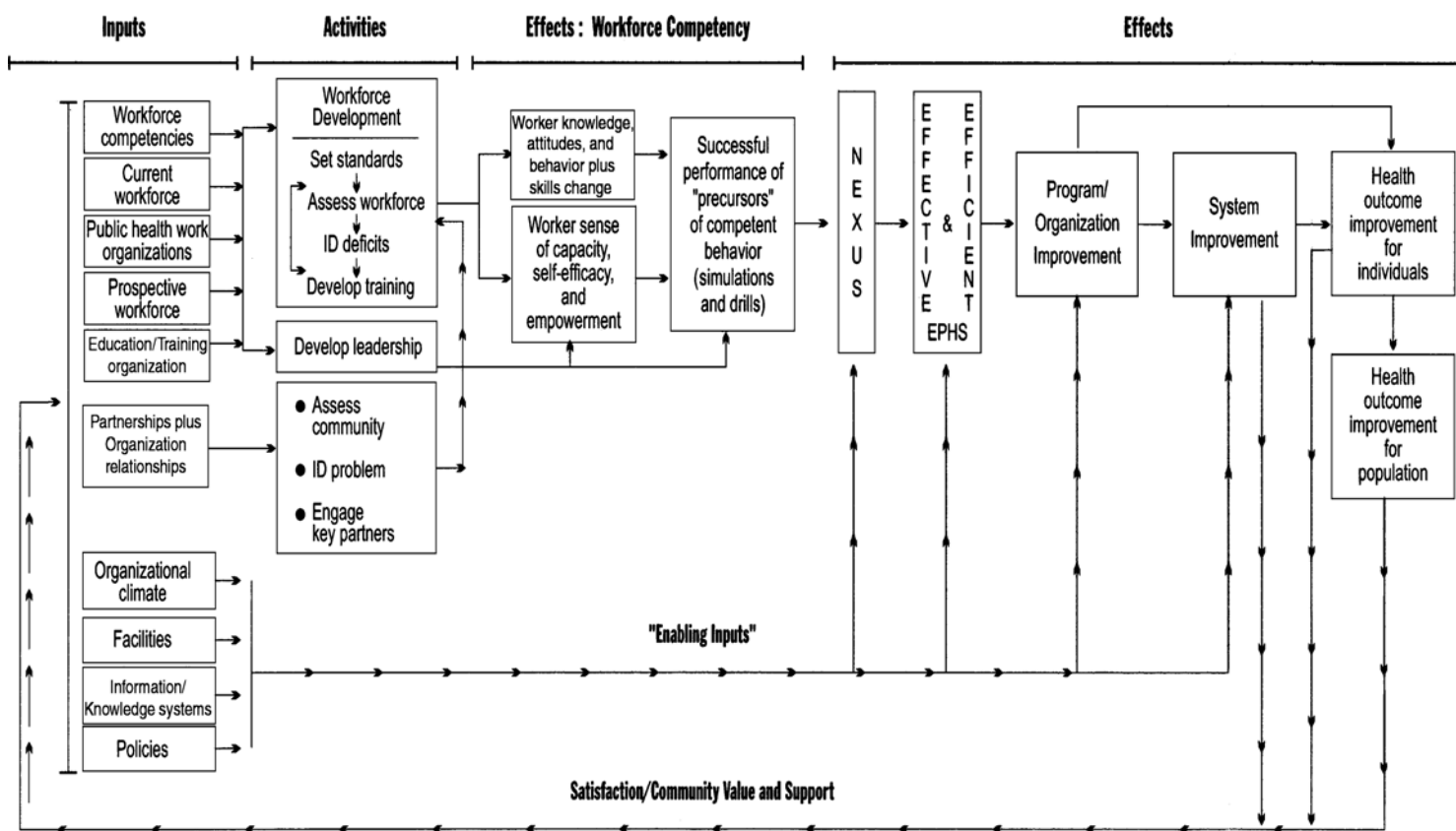
Limitations of this model:

- Although the logic model-like arrangement is promising, it depicts an overly simplistic view of the competing and interrelating processes that make up workforce development. The two components described here are necessary but insufficient, and also are too broadly conceptualized to be workable for planning a public health workforce development strategy.
- Although the model acknowledges the linkages between the elements that are included, these are not graphically represented, nor are the different layers of work organization, work and worker (which strangely have a different intended outcome of productivity).
- The overemphasis on formal licensure processes negates that many members of the public health workforce are not licensed (*refer back to Table 1 on Peel Public Health Human Resources*).

- This model leaves out many activities that are influenced if not under the ‘control’ of the work organization, for example feedback loops to the education system which has the potential to influence new recruits to the work organization.

4.2 Logic Model for Public Health Workforce Development (Cioffi et al., 2004)

Figure 3: Logic Model



Context: This logic model was created by a series of four expert panel/priority setting exercises workshops from November 2000 to February 2003 convened by the CDC on workforce development, one each for competencies/curriculum, technology, incentives, and research. Participants in the process included representatives from academia and practice. Several methods were used to build a preliminary research agenda for the expert panels, including a literature

review from 1975 to 2002 of the American Journal of Public Health, the Journal of Public Health Management and Practice, and a Pub Med/Medline and general Internet search, and a modified nominal group process for identifying priority areas. During the meetings, “Participants divided into workgroups and reviewed a pool of 135 questions [which emerged from the literature review]. Workgroups focused on four areas: (1) workforce size/composition (inputs), (2) competency requirements, (3) workforce development methods, and (4) organizational context. Each workgroup selected questions of highest importance, based upon selection criteria that included relevance to workforce, urgency to clarify to support workforce development, and feasibility to research. These were presented as recommendations to the larger group. Each individual was then prompted to select three top items for further consideration.”(pg. 189-190) The result was that the experts outlined “how various components affect workforce dynamics within an organizational context” (pg 188) and developed the “resulting logic model for public health workforce development” (pg.188).

Promising elements of this model:

- The explicit logic model aspect of this model - inputs, processes, and effects – is a strength as well as its evidentiary base in terms of expert consensus (even though this may not be considered particularly strong evidence).
- The teasing apart of the different elements of workforce competence is helpful, for example, the different effects on the workforce in terms of competency, the organization, system, and the health of individuals and the community. Some of these elements of workforce development are not captured in other two models we explored further in this report.
- Key elements of the model are clearly defined. For example:

Inputs: “competency requirements for practice, current and prospective workforce members, organizational/agency capacity to perform essential services, and education and training organizations (including schools of public health)”

Activities: “a systematic approach to planning and implementing education and training, plus a feedback loop to ensure that relevant KSAs (knowledge, skills, and abilities) are developed and are relevant for the community context”

Effects: “ changes in knowledge, attitudes, and behavior, self-efficacy, and empowerment that might be evaluated with self reports, tests, and performance observations during exercises, drills, or other simulations- all leading to improved organizational performance and eventually to improved health outcomes” (Pg 188-189).

- The identification of feedback loops within and between inputs, activities and effects highlights the relationships between elements and indicates the dynamic/changing nature of a system of workforce development.
- The model helps to identify researchable questions “within the boxes or between the arrows and subsections in the model. ... For example, an intermediate effect of education/training intervention in the workplace can be changes in self-efficacy (box). Research can explore consistent methods for measuring this construct (within-box research) or what kinds of interventions enhance self-efficacy (activities-to-effects (arrow) research)” (pg 189).
- The paper also provides “Six strategic elements for public health workforce development” as described in Figure 1 above.

Limitations:

- The limitations identified in the paper include:

- “The logic model requires further dialogue on the operational definitions/intent of each box of the model” (pg189).
- “The current model does not reflect all potential feedback loops or the likely strength with which one variable might influence another, but outlines elements for potential research questions or variables of interest” (pg189).
- For our particular purposes,
 - The research focus is beyond the scope of this review; that is, an ‘actionable’ model is required more than a ‘researchable’ model.
 - Further, this model does not include sufficient embellishment around the activities of workforce development, though some of this could be drawn in from Figure 5 above.
 - A logic model for the overall process of workforce development may be overly simplistic. A more conceptual model that contains specific logic models within it may be more appropriate to capture the complexity of the issues at hand.

4.3 A Workforce Development Model (Staron, 2008)

Figure 4. A Workforce Development Model

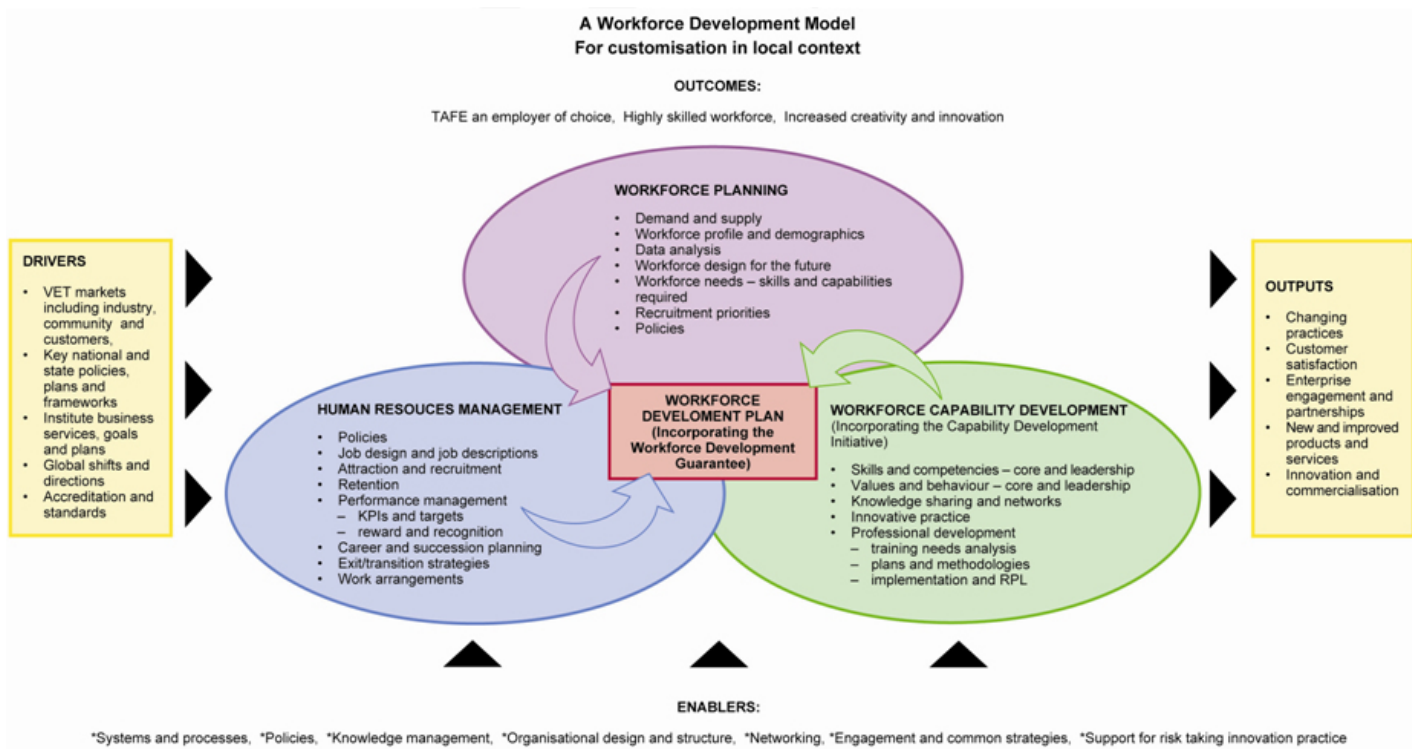


Figure 1: A Workforce Development Model

Context: This model was retrieved from the New South Wales Department of Education and Training Website’s “Promoting Emerging Practice”. It is a broad workforce model that takes into account “all the elements of workforce development”. There is, unfortunately, no explicit reference in the online article as to how the model was developed. Queries sent directly to the author about the evidentiary base were not answered.

Promising Elements:

- This model incorporates a logic-like model with a significantly embellished ‘activities’ section which integrates the three key domains of workforce development:

1. Human resource management⁴
2. Workforce capability development⁵
3. Workforce planning

in a much more conceptually sophisticated manner. Breaking out and identifying *workforce planning* is particularly important as this incorporates the precise activities HHR professionals suggest as the way to initiate the workforce development process.⁶ As such, it represents the most promising model to be embellished with elements from the other models and key relevant elements to Peel Public Health.

- The identification of ‘enablers’ (distinguished separately from inputs) helps to better clarify the role of these influences. Some of these could be made more specific to the different public health contexts to be developed.

Limitations:

- Although the ‘activities’ aspect is significantly developed and three key elements teased apart – the lists included under each element are not particularly helpful; it would be more helpful if the linkages between these various elements were made clear.

⁴ **Human resource management** is a strategic and coherent approach to the management of people in order to enhance organisational performance. It includes job design, attraction and recruitment, performance appraisal, career planning, retention and transition of staff.

⁵ **Workforce capability development** refers to the development of whole-of-organisation systems, processes, values, initiatives and enablers that support individuals/teams in taking responsibility for their own learning and sharing their knowledge and practice in complex and dynamic work environments.

⁶ The aim of **workforce planning** is to identify both short term and long term workforce supply and demand issues and needs. It involves workforce data analysis, profiling the current workforce, forecasting future needs, planning and evaluation – as the basis for making staffing decisions in relation to the organisation's vision, goals, resources and desired workforce capabilities.

- The linkages between drivers, activities and outputs are equally unclear. It is also not clear that the drivers identified are generalizable to other public health contexts
- The ‘enablers’ should also include organizational competencies.
- The outputs could be expanded to include those identified in the previous model – program, organization, system, and individual/population health improvements – as well as more directly, a competent, skilled workforce, who use their skills and creativity to make excellent decisions and have a fruitful and engaging career path regardless of ultimate career goals, evidence informed programming that has healthy outcomes for the population we serve.

5 An Expanded Model of Public Health Workforce Development for Peel Public Health

Table 4 pulls together the key promising elements of these three models into inputs, activities and outputs.

Table 4: Key Promising Elements from Conceptual Models

Model	Inputs	Activities	Outputs
1	<p>Inputs from the two key elements:</p> <p>1) Workforce Education and Training:</p> <ul style="list-style-type: none"> Universities and Graduate Schools Health Professions Schools and Programs Accreditation and licensure Agencies <p>2) Workforce Management:</p> <ul style="list-style-type: none"> On-the-Job Continuing Education Programs Professional Associations 	<p>Activities from the two key elements:</p> <p>1) Workforce Education and Training:</p> <ul style="list-style-type: none"> Planning Selection Training Evaluation <p>2) Workforce Management:</p> <ul style="list-style-type: none"> Planning Selection Supervision Performance Appraisal Training 	<p>None indicated other than the outcome of worker competence</p>
2	<ul style="list-style-type: none"> Workforce Competencies Current Workforce Public Health Work Organizations Prospective Workforce Education/Training Organization Partnerships plus Organization relationships Organizational Climate/Culture Facilities Information/ Knowledge Systems 	<p>1) Workforce Development</p> <ul style="list-style-type: none"> Set standards Assess workforce Identification of deficits Develop training <p>2) Develop Leadership</p> <p>3) Needs Assessment</p> <ul style="list-style-type: none"> Assess community Identify problem Engage key partners 	<p>1) Workforce Competency Effects</p> <ul style="list-style-type: none"> Worker knowledge, attitudes & behaviour change Worker sense of capacity, self-efficacy & empowerment Successful performance of competent behavior <p>2) Other Effects</p> <ul style="list-style-type: none"> Program/Organization Improvement System Improvement Individual and population health improvement
3	<ul style="list-style-type: none"> Key national and state policies, plans and frameworks Institute business services, goals and plans Global shifts and directions Accreditation and standards 	<p>1) Human Resources Management</p> <ul style="list-style-type: none"> Job design and job descriptions Attraction and recruitment Retention Performance management Reward and recognition Career and succession planning Exit/transition strategies Work arrangements <p>2) Workforce Planning</p> <ul style="list-style-type: none"> Demand and supply Workforce profile and demographics Workforce design for the future 	<ul style="list-style-type: none"> Changing practices Customer Satisfaction Enterprise engagement and partnerships New and improved products and services Innovation and commercialisation

		<ul style="list-style-type: none"> • Workforce needs- skills and capabilities required • Recruitment priorities <p>3) Workforce Capability Development</p> <ul style="list-style-type: none"> • Skills and competencies- core and leader • Values and behaviour- core and leader • Knowledge sharing and networks • Innovative practice • Professional development • Training needs analysis • Plans and methodologies • Implementation and RPL 	
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Figure 5 below represents a consolidation of the most promising elements of each of the three models identified above embellished with some key Peel-relevant workforce development aspects. The base of the model we take from Staron (2008) as the teasing apart of workforce planning, human resource management and workforce capability development were considered to be important conceptually. Within each of these core process elements, we further tease apart specific activities and outputs. This could be used to further develop logic models for each domain to help determine short, medium and long term outcomes/goals for each domain as defined above.

We take from the Cioffi et al. 2004 model the more clearly delineated structures/inputs to which we have added the key contextual inputs relevant to a Peel, Ontario and Canadian context (e.g., the public health core competencies). These include:

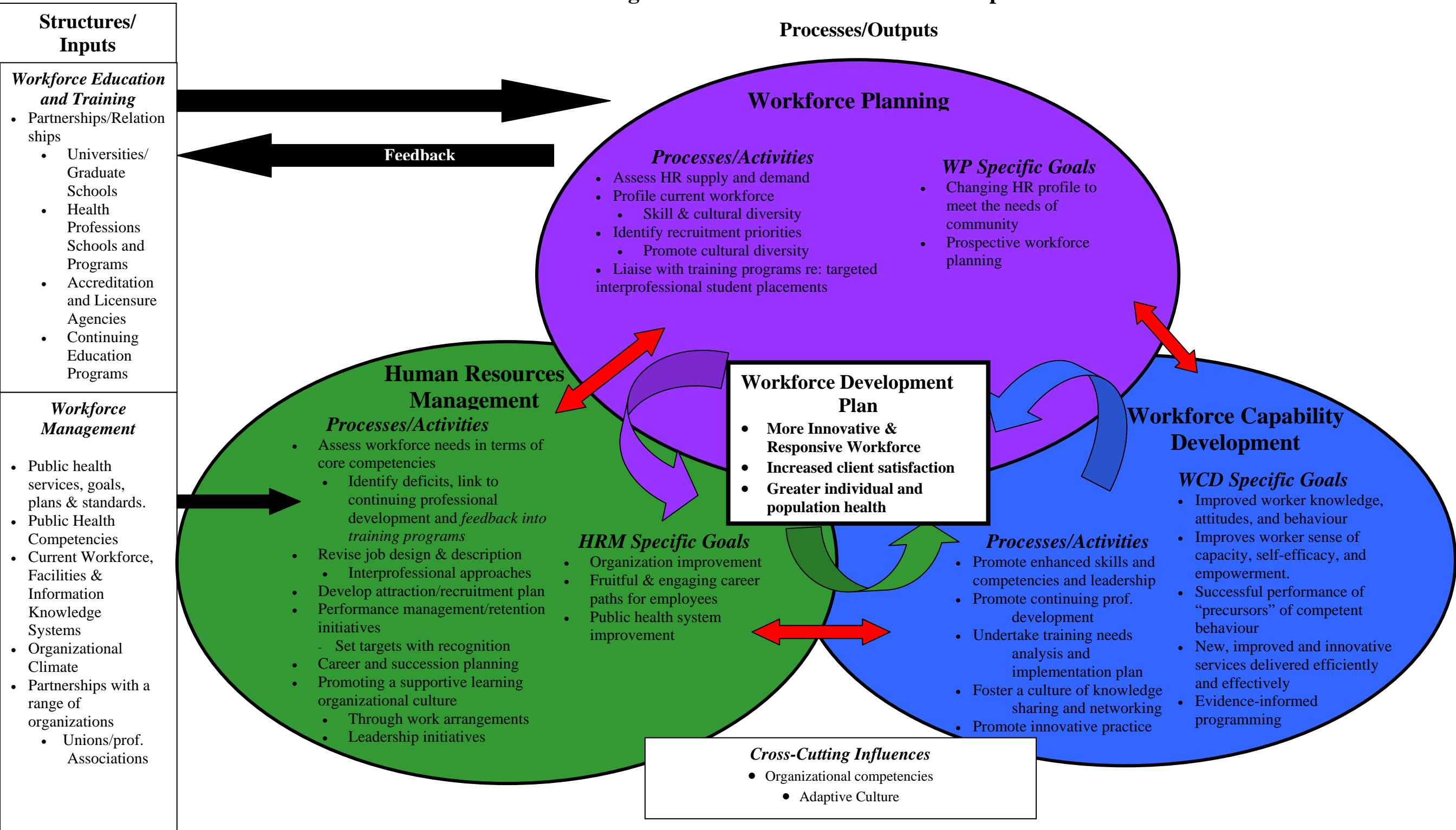
- Ethnic diversity and competency
- Emphasis on interprofessional approaches
- Promoting a supportive learning organizational culture

- Enhanced partnerships with educational institutions

Those elements not deemed relevant from the three models were not included in the model so as to keep it as streamlined as possible. For example, the item ‘policies’ was deleted as it was considered to be too vague to be useful in developing an action plan though we do acknowledge that policies must be up to date, relevant and reflect emerging priorities and current issues.

Further, the items that remain in this revised model were categorized in a semi-chronological order and reworded to reflect a more action-oriented approach.

Figure 5: A Revised Workforce Development Model



6 Recommended Action Items for PHWD for Peel Public Health

Finally, we address the third contingent question in this section: *What are the points of intervention to begin operationalizing public health workforce development?*

With respect to Workforce Planning:

- It would be important to first assess HR supply and insofar as is possible demand through targeted needs assessments
- Concurrently, it is critical to profile the key recruitment demographic and range of skills and competencies of the current workforce to identify any gaps
- Following this, undertake the key recruitment priorities to help address the needs identified. One of the goals will be to increase cultural competency and diversity.
- Undertake a review of current student placements and build a strategic vision of student placements within PPH
- Liaisons with local training programs should be established to provide feedback on the skill mix needed and also to enhance interprofessional student placements.

With respect to Human Resources Management:

- As a first priority, workforce needs in terms of the public health core competencies should be assessed

- The key core competencies that enable task shifting and responsiveness to public health issues as they arise should be identified and emphasized; this will enhance interprofessional approaches to key public health needs
- Deficits should be identified and linked to continuing professional development opportunities as well as provide feedback into training programs
- Job descriptions should be revised to better reflect the skill of the existing workforce and any continuing professional development planned or already in progress vis-à-vis the core competencies
- An attractive recruitment plan should be developed to address some of the gaps identified in the analysis above
- To ensure continued competence, performance management/retention initiatives should be developed with set targets and a system of recognition and rewards. This will feed into individual career and succession planning
- A supportive learning organizational culture should be developed through a range of work arrangements and leadership initiatives

With respect to Workforce Capability Development:

- Enhanced skills and competencies should be promoted through continuing professional development
- Undertake training needs analysis and implementation plan
- Foster a culture of knowledge sharing and networking and the development of innovative practices

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Appendices

Appendix 1: Search Strategies and Results for Academic Literature Searches (appended)

Appendix 2: Search Strategies and Results for Grey Literature Searches (appended)

Appendix 3: Annotated Bibliography for Academic and Grey Literature (appended)

Appendix 4: PHAC Core Competencies

PHAC lists 36 core competencies which are organized under 7 categories:

1) **Public Health Sciences:** *“key knowledge and critical thinking skills related to public health sciences”*

- Demonstrate knowledge about the following concepts: the health status of populations, inequities in health, the determinants of health and illness, strategies for health promotion, disease and injury prevention and health protection, as well as the factors that influence the delivery and use of health services.

- Demonstrate knowledge about the history, structure and interaction of public health and health care services at local, provincial/territorial, national, and international levels.

- Apply the public health sciences to practice.

- Use evidence and research to inform health policies and programs.

- Demonstrate the ability to pursue lifelong learning opportunities in the field of public health.

2) **Assessment and Analysis:** *“competencies needed to collect, assess and apply information (including data, facts, concepts and theories).*

- Recognize that a health concern or issue exists.
- Identify relevant and appropriate sources of information, including community assets and resources.
- Collect, store, retrieve and use accurate and appropriate information on public health issues.
- Analyze information to determine appropriate implications, uses, gaps and limitations.
- Determine the meaning of information, considering the current ethical, political, scientific, socio-cultural and economic contexts.
- Recommend specific actions based on the analysis of information.

3) **Policy and Program Planning, Implementation and Evaluation:** *“core competencies needed to effectively choose options, and to plan, implement and evaluate policies and/or programs in public health”*

- Describe selected policy and program options to address a specific public health issue.
- Describe the implications of each option, especially as they apply to the determinants of health and recommend or decide on a course of action.
- Develop a plan to implement a course of action taking into account relevant evidence, legislation, emergency planning procedures, regulations and policies.
- Implement a policy or program and/or take appropriate action to address a specific public health issue.
- Demonstrate the ability to implement effective practice guidelines.
- Evaluate an action, policy or program.

- Demonstrate an ability to set and follow priorities, and to maximize outcomes based on available resources.

- Demonstrate the ability to fulfill functional roles in response to a public health emergency.

4) **Partnerships, Collaboration and Advocacy:** *“competencies required to influence and work with other to improve the health and well-being of the public through pursuit of a common goal”.*

- Identify and collaborate with partners in addressing public health issues.

- Use skills such as team building, negotiation, conflict management and group facilitation to build partnerships.

- Mediate between differing interests in the pursuit of health and well-being, and facilitate the allocation of resources.

- Advocate for healthy public policies and services that promote and protect the health and well-being of individuals and communities.

5) **Diversity and Inclusiveness:** *“identifies socio-cultural competencies required to interact effectively with diverse individuals, groups and communities.”*

- Recognize how the determinants of health (biological, social, cultural, economic and physical) influence the health and well-being of specific population groups.

- Address population diversity when planning, implementing, adapting and evaluating public health programs and policies.

- Apply culturally-relevant and appropriate approaches with people from diverse cultural, socioeconomic and educational backgrounds, and persons of all ages, genders, health status, sexual orientations and abilities.

6) **Communication:** *“involves an interchange of ideas, opinions and information”*

- Communicate effectively with individuals, families, groups, communities and colleagues.
- Interpret information for professional, non-professional and community audiences.
- Mobilize individuals and communities by using appropriate media, community resources and social marketing techniques.
- Use current technology to communicate effectively.

7) **Leadership:** *“competencies that build capacity, improve performance and enhance the quality of the working environment. They also enable organizations and communities to create, communicate and apply shared visions, missions and values.”*

- Describe the mission and priorities of the public health organization where one works, and apply them in practice.
- Contribute to developing key values and a shared vision in planning and implementing public health programs and policies in the community.
- Utilize public health ethics to manage self, others, information and resources.
- Contribute to team and organizational learning in order to advance public health goals.

- Demonstrate an ability to build community capacity by sharing knowledge, tools, expertise and experience.