Summary Report

The Development of a Draft Set of Public Health Workforce Core Competencies

Prepared by

Federal/Provincial/ Territorial Joint Task Group on Public Health Human Resources

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1. Introduction and Purpose

Several key reports have stressed the importance of strengthening the public health system in Canada.[1-4] While many areas of the public health system require attention, development of the workforce is of particular importance. The National Advisory Committee on SARS and Public Health stated that improving the public health system is impossible without ensuring that public health departments are staffed with appropriately skilled practitioners who can access ongoing professional development.[3]

Based on direction from the F/P/T Conference of Deputy Ministers of Health, a joint task group on Public Health Human Resources (PHHRJTG) was established under the leadership of the Advisory Committees on Health Delivery and Human Resources (ACHDHR) and Public Health and Health Security (ACPHHS).

The mandate of the PHHRJTG is to focus on long-term planning, forecasting, research, education, and training related to public health human resources. The development of draft public health core competencies, as described in reference 5, addresses a key deliverable of this task group.

The purpose of this is to provide a summary of the core competency report[5]. The report proposes a draft set of public health workforce core competencies that can be used as a foundation for public health human resource planning. Those doing further work on public health competencies should read the full report.

2. Why do we need public health core competencies?

In their report to the Conference of Deputies of Ministers of Health, the on Strengthening Public Health Infrastructure Task Group (SPHITG) stated "Of the many gaps in public health system infrastructure, none is more important than ensuring a sufficient and *competent* workforce."[6]

In addition, their report recommended "developing and implementing a national public health workforce development strategy. This includes identifying and applying public health workforce *competencies* for practice in the 21st century to assess training needs, to guide curriculum development, and to achieve consistency in training programs."

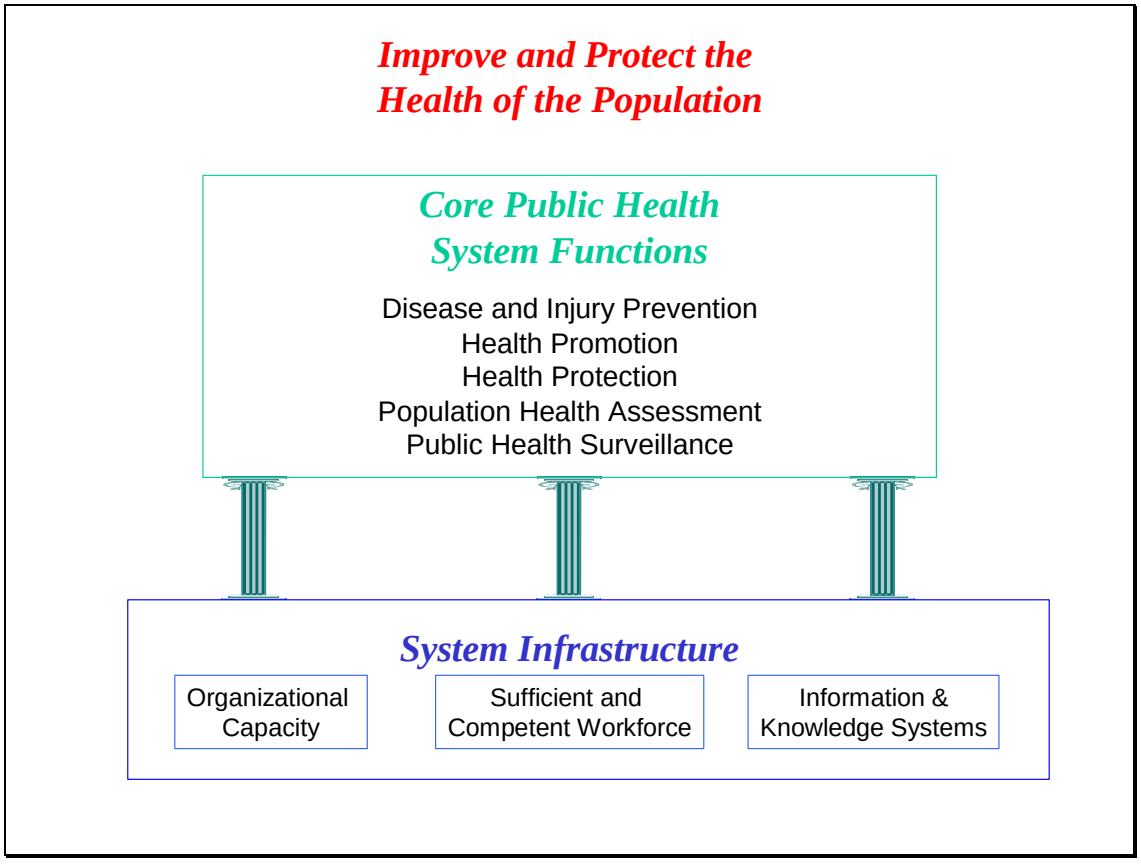
Identification and application of public health competencies was also recommended by regional workshops on developing a public health workforce in Canada.[7] Work commissioned by Health Canada on public health core competencies and competency sets for public health nurses and public health inspectors is also underway.

Competencies are defined as the knowledge, skills and abilities demonstrated by organizational or system members that are critical to the effective and efficient function of an organization or system. Competencies can contribute to public health workforce development by:

- providing a foundation to assess the types and numbers of public health practitioners
- identifying the skills and abilities required across an organization or program,
- providing a rational basis for curriculum development
- providing a rational basis for assessment of training needs, and
- providing consistency in the development of job descriptions and performance assessment.

Figure 1 shows the public health system core functions and system infrastructure requirements for a responsive, integrated, comprehensive public health system. Competencies are a foundational piece of a "sufficient and competent" workforce in public health.

Figure 1: Public Health System Core Functions and Supporting Infrastructure (from Reference 6)



Competencies are critical element for public health workforce planning. In Australia, their planning framework for the public health workforce includes the following:[8]

- Establish the services needed by the public;
- Work out the skills and *competencies* needed to deliver those services;

- Derive the number and types of staff required to provide the necessary *competencies* to deliver the services at the organizational or program level;
- Match actual positions with needed *competencies* and identify gaps;
- Link gaps to training and educational policies.

The U.S. workforce development plan involves six strategies that are linked in an iterative loop:[9]

- Monitor workforce composition and forecast needs;
- Identify *competencies* and develop related content/curriculum;
- Design an integrated learning system;
- Use incentives to assure competency;
- Conduct evaluation and research;
- Assure financial support.

Core public health competencies are those competencies that are common to all public health practitioners. This project has chosen to adopt (with slight modification) the definition for core competencies used by the U.S. Council on Linkages Between Academia and Public Health Practice:[10]

> **The set of cross-cutting skills, knowledge and abilities necessary for the broad practice of public health.**

Key features of core competencies are that they:

- Transcend the boundaries of the specific disciplines within public health;
- Reflect the common knowledge, skills and abilities of all professionals working within the field of public health;
- Are independent of program/topic area so that they reflect the public health approach to health issues;
- Have potential to be further characterized by:
    - Depth of competency (i.e. proficiency);
    - Relationship to role in organization (front-line, supervisory, etc.);
    - Relationship to target setting (e.g. client, organization, community);
    - Uniqueness to public health (i.e. generic vs. specific to public health).

While the core competencies are meant to apply to the broad practice of all public health practitioners, individual practitioners will have different levels of ability for particular competencies dependent on their level of training and their role within the organization. Technical and discipline specific competencies are also important, and are described further in Appendix 1.

3. How were the draft set of public health core competencies developed?

A review of the literature identified that the United States and England have spent significant amounts of time, resources, and expertise in developing public health core competencies. These initiatives, spanning almost a decade of development, consultation, and consensus building, were thought to be a valuable resource for the joint task group and recognized that core competencies for Canada could build on the extensive work completed by these other countries. Fast tracking development of core competencies was chosen using the following rationale:

- extensive work had already been completed by other jurisdictions
- public health functions are likely broadly transferable from those jurisdictions
- core competencies are urgently needed to proceed with public health human resource planning
- the ability to undertake a 5-10 year process did not exist, nor was it desirable
- funding was not available to start at a beginning stage
- it was believed that a "made in Canada" set of core competencies could be achieved

Therefore, the following steps were undertaken in the development of the core competencies using the US and UK competency work in addition to work completed in Canada. The detailed results of this process are described in reference 5.

a) **Start with core public health functions:** These are the 5 core functions recommended by Advisory Committee on Population Health (assessment, surveillance, prevention, promotion, protection).

b) **Identify the core elements that comprise each of the functions.** Need to identify what is actually meant by each of the five functions in order to identify the required competencies.

c) **Map each competency statement from existing core competency sets to the core elements.** Each of the competency statements from four existing sets of core competencies were matched with the most similar core element.

d) **Analyze competencies mapped to common core elements and select/combine competencies to capture key themes.** Many of the core elements had multiple matched competency statements. Needed to assess which statements best described necessary knowledge, skills, and abilities.

e) **Assess pool of selected competencies to eliminate duplication.** Step 4 above reduced duplication among competency statements for core elements mapped to a particular function. This step addressed duplication of statements across the five functions.

f) **Identify and label groups of competencies that are addressing a common theme.** Competency statements reflecting common themes were grouped together to form competency "domains".

4. Draft Core Competencies and Next Steps

The draft set of public health core competencies are included in the following tables, and are meant to apply to individuals with post-secondary training in public health. With respect to key academic areas needing to be covered in the preparation of public health professionals, core competencies have been extracted from these tables and are found in Appendix 2, categorized according to the Council on Education for Public Health (http://www.ceph.org/) requirements for accrediting public health educational programs.

The core competencies developed here should be considered "draft" and be used as a starting point for validation with the public health community. Upon validation, tools will need to be

developed and applied to assess the degree to which current public health practitioners possess the core competencies, technical and discipline specific competencies will need to be developed and linked the core competencies, and an ongoing process of revising and updating competencies will need to be established. In addition, academic public health programs will need to assess whether the core competencies are being addressed in training programs, and competency based continuing education programs will need to be developed and provided to address gaps in core competencies in the current workforce.

The Strengthening Public Health Infrastructure Task Group made a very important statement that bears repeating: *"The lack of success in translating previous recommendations into sustained action is a serious concern for the Task Group. One of the most important limitations in the past was the absence of any individual or group that was clearly responsible and accountable for implementation."(*ref 6, pg 51)

In this regard, these draft core competencies should be reviewed and modified or validated through a national process undertaken by the Public Health Agency of Canada. This process should be done in an expeditious manner (six months from start to finish).

1 - Core Public Health Sciences Domain

A public health practitioner is able to…

1.1. Understand the historical development, structure, and interaction of public health and health care systems at the local, provincial/territorial, national, and international levels
1.2. Understand the concepts of health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of, and decision making about, health services
1.3. Apply the basic public health sciences including behavioural and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
1.4. Identify and apply basic research methods used in public health
1.5. Develop a lifelong commitment to rigorous critical thinking
1.6. Identify and retrieve current relevant scientific evidence
1.7. Review and critically appraise the evidence for public health interventions
1.8. Identify the role of evidence in developing health policies and programs and appropriately apply evidence

2 - Analysis and Assessment Domain

A public health practitioner is able to…

2.1. Define a problem
2.2. Identify relevant and appropriate data and information sources
2.3. Collect accurate quantitative and qualitative primary data when secondary data is unavailable
2.4. Identify community assets and available resources

2.5. Determine appropriate uses and limitations of both quantitative and qualitative data
2.6. Evaluate the integrity and comparability of data and identify gaps in data sources
2.7. Obtain and interpret information regarding risks and benefits to the community
2.8. Partner with communities to validate and attach meaning to collected quantitative and qualitative data
2.9. Make relevant inferences from quantitative and qualitative data
2.10. Recognize how the data illuminates ethical, political, scientific, economic, and overall public health issues
2.11. Identify relationships, trends, and patterns in health assessment information and make appropriate recommendations on further investigations or actions that should be taken
2.12. Understand cost-effectiveness, cost-benefit, and cost-utility analyses
2.13. Apply ethical principles to the collection, maintenance, use, and dissemination of data and information
2.14. Apply data collection processes, information technology applications, and computer systems storage/retrieval strategies

3 - Policy Development and Program Planning Domain

A public health practitioner is able to…

3.1. State policy options and write clear and concise policy statements
3.2. Articulate the health, economic, administrative, legal, social, and political implications of each policy option
3.3. State the feasibility and expected outcomes of each policy option
3.4. Utilize current techniques in decision analysis and health planning
3.5. Decide on the appropriate course of action
3.6. Develop a plan to implement policy, including goals, outcome and process objectives, and implementation steps
3.7. Monitor and evaluate implementation of interventions for their intended and unintended effects, costs, quality, and acceptability
3.8. Develop and present a budget
3.9. Develop strategies for determining budget priorities
3.10. Identify, interpret, implement, and understand the limitations and uses of public health laws, regulations, and policies
3.11. Prepare for and contribute to the management of incidents, outbreaks and emergencies

4 - Partnership and Collaboration Domain

A public health practitioner is able to…

4.1. Describe the role of governments and community partners in the delivery of public health services
4.2. Identify how public bodies and private organizations and practitioners operate within a community
4.3. Establish and maintain linkages with community leaders and other key stakeholders
4.4. Solicit input from individuals and organizations
4.5. Support governments and community partners in their efforts to improve community quality of life
4.6. Utilize leadership, team building, negotiation, and conflict resolution skills to build community partnerships
4.7. Collaborate with governments and community partners in common and coordinated efforts
4.8. Advocate for individuals and communities on aspects which will improve their health and wellbeing

4.9. Facilitate a dialog among governments and community partners about strategies to attain and sustain healthier communities

5 - Communication Domain

A public health practitioner is able to…

5.1. Communicate clearly and concisely
5.2. Listen to others in an unbiased manner, respect points of view of others, and promote the expression of diverse opinions and perspectives
5.3. Provide health status, demographic, statistical, programmatic, and scientific information tailored to professional and lay audiences
5.4. Understand social marketing principles and consumer behaviour
5.5. Use the media, advanced technologies, and community networks to receive and communicate information
5.6. Advocate for public health programs and resources

6 - Socio-Cultural Competencies Domain

A public health practitioner is able to…

6.1. Utilize appropriate methods for interacting sensitively, effectively, and professionally with persons with diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages, gender, health status, and lifestyle preferences
6.2. Identify the role of diverse population characteristics in determining the delivery of public health services
6.3. Develop and adapt policies and program delivery that responds to diversity in population characteristics
6.4. Understand the importance of a diverse public health workforce

7 - Leadership and Systems Approaches Domain

A public health practitioner is able to…

7.1. Know public health organization mission and priorities
7.2. Operationalize the mission of the organization within personal or unit scope of work.
7.3. Identify internal and external issues that may impact delivery of essential public health services (i.e., strategic planning)
7.4. Ethically manage self, people and resources
7.5. Help create key values and shared vision and use these principles to guide action
7.6. Understand and support the contribution of other government and community partner programs relative to achieving the public health vision and mission
7.7. Understand and incorporate international best practices
7.8. Contribute to team and organizational learning

Contribute to improvements in the workplace environment (improve work activities, recommend improvements to plans)
7.9. Contribute to development, implementation, and monitoring of organizational performance standards

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10. Council on Linkages Between Academia and Public Health Practice. Core competencies project: core competencies list. 2001. Available from: www.trainingfinder.org/competencies/list.htm. Accessed: 24-6-2004.

Appendix 1

Core competencies reflect the common understanding and set of skills, knowledge and abilities that characterize the public health approach to health issues. Of course, there are many additional competencies that will only be possessed by some members of the public health workforce. These will be collectively referred to as "technical competencies" and are, by definition, distinct from core competencies. The following is a working definition of technical competencies:

> Special knowledge, skills or abilities that are not possessed by all public health practitioners and are required for a particular aspect of public health practice.

Discipline-specific competencies have been defined as:

> The breadth and depth of core and technical competencies that are used to define a particular discipline.

Discipline-specific competencies would be expected to provide further detail on the depth of proficiency of core competencies that discipline members should possess and the expectations for additional technical competencies. One of the potential advantages of developing core competencies is to create a common framework upon which other competency sets will be based.

Appendix 1 of the detailed report provides further discussion on how core, technical, and discipline-specific competencies are inter-related. The Appendix also describes how these three types of competencies will be needed to identify capacity requirements for public health programming. The Australian report entitled "National Public Health Education Framework Project. Sydney: Department of Health and Aging, 2002" discusses further defining competencies for MPH-type programs.

Core, technical, and discipline-specific competencies are all examples of individual-level competencies. In other words, these are competencies a particular person has or needs in order to contribute to the effective and efficient function of the organization or system. There are also competencies that exist at the organizational level and that are required for the organization to effectively and efficiently function.

Appendix 2

Areas of knowledge basic to public health and proposed core public health competencies (adapted from Council on Education for Public Health requirements for accrediting public health educational programs. (http://www.ceph.org/):

The following categories are used by the US Council on Education for Public Health to describe the areas of knowledge considered basic to public health, when accrediting schools of public health. The competencies under each heading have been drawn from the list of proposed Canadian core public health competencies.

1. Biostatistics - collection, storage, retrieval, analysis and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis.

   Apply data collection processes, information technology applications, and computer systems storage/retrieval strategies.

   Determine appropriate uses and limitations of both quantitative and qualitative data.

   Evaluate the integrity and comparability of data and identify gaps in data sources.

   Make relevant inferences from quantitative and qualitative data.

2. Epidemiology - distributions and determinants of disease, disabilities and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health.

   Understand the concepts of health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of, and decision making about, health services.

   Identify relevant and appropriate data and information sources

   Collect accurate quantitative and qualitative primary data when secondary data is unavailable
   Identify relationships, trends, and patterns in health assessment information and make appropriate recommendations on further investigations or actions that should be taken.

   Review and critically appraise the evidence for public health interventions.

   Identify the role of evidence in developing health policies and programs and appropriately apply evidence.

3. Environmental health sciences - environmental factors including biological, physical and chemical factors which affect the health of a community;

Obtain and interpret information regarding risks and benefits to the community.

4. Health services administration - planning, organization, administration, management, evaluation and policy analysis of health programs; and

   Understand the historical development, structure, and interaction of public health and health care systems at the local, provincial/territorial, national, and international levels.

   Understand cost-effectiveness, cost-benefit, and cost-utility analyses.

   Develop a plan to implement policy, including goals, outcome and process objectives, and implementation steps.

   Monitor and evaluate implementation of interventions for their intended and unintended effects, costs, quality, and acceptability.

   Develop and present a budget.

   Develop strategies for determining budget priorities.

   Identify, interpret, implement, and understand the limitations and uses of public health laws, regulations, and policies.

5. Social and behavioral sciences - concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

   Identify community assets and available resources.

   Partner with communities to validate and attach meaning to collected quantitative and qualitative data.

   Recognize how the data illuminates ethical, political, scientific, economic, and overall public health issues.

   Provide health status, demographic, statistical, programmatic, and scientific information tailored to professional and lay audiences.

   Understand social marketing principles and consumer behaviour.

   Identify the role of diverse population characteristics in determining the delivery of public health services.

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September 2004

F/P/T Public Health Human Resources Joint Task Group

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Executive Summary

The reports of the National Advisory Committee on SARS and Public Health and other groups focussing on strengthening the public health system have repeatedly stressed the importance of developing a sufficiently numerous and competent public health workforce in Canada. In response to the need to strengthen the public health workforce, a Public Health Human Resources Joint Task Group has been formed. The Group's mandate is to focus on long-term planning, forecasting, research, education, and training related to public health human resources. An environmental scan of workforce development efforts in other countries and a series of regional consultations conducted across Canada have emphasized the importance of using a competency-based approach to workforce development.

Competencies have been defined as the knowledge, skills and abilities demonstrated by organizational or system members that are critical to the effective and efficient function of an organization or system. Competencies can contribute to public health workforce development by identifying the skills and abilities required across an organization or program, provide a rational basis for curriculum development and assessment of training needs, and provide consistency in the development of job descriptions and performance assessment.

Building on work conducted by the Ontario Public Health Association, this project has been focussed on identifying a set of core competencies for public health. Core competencies are the set of cross-cutting skills, knowledge and abilities necessary for the broad practice of public health. They transcend the boundaries of the specific disciplines within public health and reflect the common knowledge, skills and abilities of all professionals working within the field of public health. Considering the importance of core competencies to the public health community, no small working group could possibly define the competencies without input from the field. The set of core competencies being developed here should be considered "draft" and be used as a starting point for consultations with the public health community leading to a final working set of core competencies. It should be noted that even the "final" set of competencies will likely be something that will evolve over time with experience and with the recognition of the need to incorporate new practices as the system evolves.

In tackling the development of core competencies, consistent feedback was received that the competencies should be grounded in the core functions of the public health system. The five functions recommended by the Advisory Committee on Population Health[i] were therefore used as the starting point and broken down into their component parts or core elements. These core elements were then used to map the hundreds of core competency statements from existing competency sets from other countries and assess clarity of themes and wording among statements. A pool of 62 competency statements was eventually selected which had been derived from three existing competency sets from the U.S. and England. These 62 core competencies were then grouped into 7 domains reflecting common themes. The main report and accompanying appendices provide the details regarding each of the steps in the development of the final set of competencies.

The set of core competencies attempts to capture the broad range of skills that a public health practitioner requires to be able to apply public health approaches to population

[i] The ACPH had recommended five core functions of the public health system: population health assessment; health surveillance; disease and injury prevention; health promotion; and health protection.

health issues. Typical public health activities are complex and will often be reflected across two or more competency items. Therefore, individual competency statements need to be viewed in the context of the whole competency set. While the core competencies are meant to apply to the broad practice of all public health practitioners, it is only reasonable that individual practitioners will have different levels of ability for particular competencies dependent on their level of training and their role within the organization. For example, not all practitioners are going to know how to develop and present a budget to a board of health. However, one would expect that all practitioners would at least be aware of the budget process and can contribute to the program's ability to develop and maintain their budget. While no attempt has been made in this initial step of developing a draft set of competencies to apply proficiency expectations by level of the organization, this may need to be considered in the future.

The core competencies are meant to apply to individuals with post-secondary training in public health. The set of core competencies would therefore not directly apply to secretarial staff or to non-professional allied public health workers. The latter group of workers may be used in a variety of settings (e.g. street outreach, community outreach, peer home visiting, First Nations communities, etc.) and will have a narrower focus of work than public health professionals and would be expected to possess a sub-set of the core competencies depending upon their specific role.

In addition to applying the competencies to the different layers within an organization (e.g. front-line, supervisor, management), the competencies also need to be able to be applied to different levels of the public health system (e.g. local/regional, provincial/territorial, federal). Since roles and responsibilities vary across system levels, the interpretation and application of competency statements may need to take these different contexts into consideration.

The recommended draft set of public health core competencies includes the following:

1 - Core Public Health Sciences Domain

A public health practitioner is able to…

1.9. Understand the historical development, structure, and interaction of public health and health care systems at the local, provincial/territorial, national, and international levels
1.10. Understand the concepts of health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of, and decision making about, health services
1.11. Apply the basic public health sciences including behavioural and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
1.12. Identify and apply basic research methods used in public health
1.13. Develop a lifelong commitment to rigorous critical thinking
1.14. Identify and retrieve current relevant scientific evidence
1.15. Review and critically appraise the evidence for public health interventions
1.16. Identify the role of evidence in developing health policies and programs and appropriately apply evidence

2 - Analysis and Assessment Domain

A public health practitioner is able to…

2.15. Define a problem
2.16. Identify relevant and appropriate data and information sources
2.17. Collect accurate quantitative and qualitative primary data when secondary data is unavailable
2.18. Identify community assets and available resources
2.19. Determine appropriate uses and limitations of both quantitative and qualitative data
2.20. Evaluate the integrity and comparability of data and identify gaps in data sources
2.21. Obtain and interpret information regarding risks and benefits to the community
2.22. Partner with communities to validate and attach meaning to collected quantitative and qualitative data
2.23. Make relevant inferences from quantitative and qualitative data
2.24. Recognize how the data illuminates ethical, political, scientific, economic, and overall public health issues
2.25. Identify relationships, trends, and patterns in health assessment information and make appropriate recommendations on further investigations or actions that should be taken
2.26. Understand cost-effectiveness, cost-benefit, and cost-utility analyses
2.27. Apply ethical principles to the collection, maintenance, use, and dissemination of data and information
2.28. Apply data collection processes, information technology applications, and computer systems storage/retrieval strategies

3 - Policy Development and Program Planning Domain

A public health practitioner is able to…

3.12. State policy options and write clear and concise policy statements
3.13. Articulate the health, economic, administrative, legal, social, and political implications of each policy option
3.14. State the feasibility and expected outcomes of each policy option
3.15. Utilize current techniques in decision analysis and health planning
3.16. Decide on the appropriate course of action
3.17. Develop a plan to implement policy, including goals, outcome and process objectives, and implementation steps
3.18. Monitor and evaluate implementation of interventions for their intended and unintended effects, costs, quality, and acceptability
3.19. Develop and present a budget
3.20. Develop strategies for determining budget priorities
3.21. Identify, interpret, implement, and understand the limitations and uses of public health laws, regulations, and policies
3.22. Prepare for and contribute to the management of incidents, outbreaks and emergencies

4 - Partnership and Collaboration Domain

A public health practitioner is able to…

4.10. Describe the role of governments and community partners in the delivery of public health services
4.11. Identify how public bodies and private organizations and practitioners operate within a community
4.12. Establish and maintain linkages with community leaders and other key stakeholders
4.13. Solicit input from individuals and organizations
4.14. Support governments and community partners in their efforts to improve community quality of life
4.15. Utilize leadership, team building, negotiation, and conflict resolution skills to build community partnerships
4.16. Collaborate with governments and community partners in common and coordinated efforts
4.17. Advocate for individuals and communities on aspects which will improve their health and wellbeing
4.18. Facilitate a dialog among governments and community partners about strategies to attain and sustain healthier communities

5 - Communication Domain

A public health practitioner is able to…

5.7. Communicate clearly and concisely
5.8. Listen to others in an unbiased manner, respect points of view of others, and promote the expression of diverse opinions and perspectives
5.9. Provide health status, demographic, statistical, programmatic, and scientific information tailored to professional and lay audiences
5.10. Understand social marketing principles and consumer behaviour
5.11. Use the media, advanced technologies, and community networks to receive and communicate information
5.12. Advocate for public health programs and resources

6 - Socio-Cultural Competencies Domain

A public health practitioner is able to…

6.5. Utilize appropriate methods for interacting sensitively, effectively, and professionally with persons with diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages, gender, health status, and lifestyle preferences
6.6. Identify the role of diverse population characteristics in determining the delivery of public health services
6.7. Develop and adapt policies and program delivery that responds to diversity in population characteristics
6.8. Understand the importance of a diverse public health workforce

7 - Leadership and Systems Approaches Domain

A public health practitioner is able to…

7.10. Know public health organization mission and priorities
7.11. Operationalize the mission of the organization within personal or unit scope of work.
7.12. Identify internal and external issues that may impact delivery of essential public health services (i.e., strategic planning)
7.13. Ethically manage self, people and resources
7.14. Help create key values and shared vision and use these principles to guide action
7.15. Understand and support the contribution of other government and community partner programs relative to achieving the public health vision and mission
7.16. Understand and incorporate international best practices
7.17. Contribute to team and organizational learning
7.18. Contribute to improvements in the workplace environment (improve work activities, recommend improvements to plans)
7.19. Contribute to development, implementation, and monitoring of organizational performance standards

The Development of a Draft Set of Public Health Workforce Core Competencies

Introduction

Several key reports have stressed the importance of strengthening the public health system in Canada.[1-4] While there are many areas of public health system infrastructure that require attention, development of the public health workforce is of particular importance. The National Advisory Committee on SARS and Public Health stated that improving the public health system is impossible without ensuring that public health departments are staffed with appropriately skilled practitioners who can access ongoing professional development.[3]

In response to the need to strengthen the public health workforce, a Public Health Human Resources Joint Task Group[i] (Joint Task Group) was formed. The Joint Task Group's mandate is to focus on long-term planning, forecasting, research, education, and training related to public health human resources.

The Joint Task Group has been involved in a series of initiatives to inform their work and decision-making. A Health Canada commissioned report by the Nevis Consulting Group provides an excellent overview of the workforce development efforts that have been undertaken in Australia, England and the U.S.[5] A common theme was the use of a competency-based approach to workforce development.

In Australia, their planning framework for the public health workforce includes the following:[6]

- Establish the services needed by the public;
- Work out the skills and *competencies* needed to deliver those services;
- Derive the number and types of staff required to provide the necessary *competencies* to deliver the services at the organizational or program level;
- Match actual positions with needed *competencies* and identify gaps;
- Link gaps to training and educational policies.

[i] The Joint Task Group reports to the F/P/T Strengthening Public Health System Infrastructure Task Group (SPHSITG) and the F/P/T Advisory Committee on Health Development and Human Resources (ACHDHR).

The U.S. workforce development plan involves six strategies that are linked in an iterative loop:[7]

- Monitor workforce composition and forecast needs;
- Identify *competencies* and develop related content/curriculum;
- Design an integrated learning system;
- Use incentives to assure competency;
- Conduct evaluation and research;
- Assure financial support.

One of the three key recommendations from the Nevis Group's report was to establish competency sets applicable to the Canadian situation.[5]

The Joint Task Group also participated in a recent series of consultative workshops with public health academics, practitioners and other system stakeholders. Several themes and priorities for workforce training and education emerged from the workshops including a consistent recommendation for the identification and application of public health competencies.[8]

To further pursue the competencies issue, Health Canada commissioned the Ontario Public Health Association (OPHA) to prepare a literature review and conduct a consultative workshop regarding the development of public health core competencies.[9,10] Additional competency projects have been commissioned by Health Canada to develop competency sets for public health nurses and public health inspectors.

Building on the work to-date, this report has been commissioned by the Joint Task Group and describes the development of a draft set of public health workforce core competencies for Canada.

The Taxonomy of Public Health Competencies

Competencies have been defined as the knowledge, skills and abilities demonstrated by organizational or system members that are critical to the effective and efficient function of an organization or system.[11] Competencies can contribute to public health workforce development in a variety of ways:[12]

- Identify the set of skills and abilities required across an organization or program;
- Provide a rational basis for curriculum development;
- Provide a rational basis for assessing training needs of the current workforce;
- Provide consistency in the development of job descriptions and performance assessment.

Core competencies are those competencies that are common to all public health practitioners. This project has chosen to adopt (with slight modification) the definition for core competencies used by the U.S. Council on Linkages Between Academia and Public Health Practice:[13]

> The set of cross-cutting skills, knowledge and abilities necessary for the broad practice of public health.

Key features of core competencies include the following:

- Transcend the boundaries of the specific disciplines within public health;
- Reflect the common knowledge, skills and abilities of all professionals working within the field of public health;
- Independent of program/topic area so that they reflect the public health approach to health issues;
- Have potential to be further characterized by:
    - Depth of competency (i.e. proficiency);
    - Relationship to role in organization (front-line, supervisory, etc.);
    - Relationship to target setting (e.g. client, organization, community);
    - Uniqueness to public health (i.e. generic vs. specific to public health).

Core competencies reflect the common understanding and set of skills, knowledge and abilities that characterize the public health approach to health issues. Of course, there are many additional competencies that will only be possessed by some members of the public health workforce. These will be collectively referred to as "technical competencies" and are, by definition, distinct from core competencies. The following working definition of technical competencies has been used in this report:

> Special knowledge, skills or abilities that are not possessed by all public health practitioners and are required for a particular aspect of public health practice.

Earlier in this introduction, the development of competency sets for public health nurses and public health inspectors was described. These are examples of discipline-specific competencies. In this report, these have been defined as:

> The breadth and depth of core and technical competencies that are used to define a particular discipline.

Discipline-specific competencies would be expected to provide further detail on the depth of proficiency of core competencies that discipline members should possess and the expectations for additional technical competencies. One of the potential advantages of developing core competencies is to create a common framework upon which other competency sets will be based.

Appendix 1 provides further discussion on how core, technical, and discipline-specific competencies are inter-related. The Appendix also describes how these three types of competencies will be needed to identify capacity requirements for public health programming. Some schemes for describing competencies utilize a number of other terms (e.g. functional, generic, topic-specific, etc.) and these are reviewed in more detail elsewhere.[9,12]

Core, technical, and discipline-specific competencies are all examples of individual-level competencies. In other words, these are competencies a particular person has or needs in order to

contribute to the effective and efficient function of the organization or system. There are also competencies that exist at the organizational level and that are required for the organization to effectively and efficiently function. These will not be further considered in this report, although it has been suggested that these competencies may be related to accreditation principles (*Personal Communication, Trevor Hancock, May 2004*).

Project Scope

An explicit approach to the development of the public health workforce is embarking on new territory for the field of public health. The drafting of core competencies is but one small step and it is very easy to become distracted by the many other areas of public health human resources that require development. It is therefore important to be clear about what this project intends to accomplish.

This project will…

> Produce a draft set of core competencies for the public health workforce. This draft set of competencies will then need to be used as a starting point for consultations with the public health community leading to a final working set of core competencies. It should be noted that even the "final" set of competencies will likely be something that will evolve over time with experience and with the recognition of the need to incorporate new practices as the system evolves.

This project will not…

Identify technical or discipline-specific competencies. However, the identification of core competencies will hopefully be of assistance to those parties drafting discipline-specific competency sets.

Identify competency requirements of secretarial staff or of non-professional allied public health workers. The latter group of workers may be used in a variety of settings (e.g. street outreach, community outreach, peer home visiting, etc.) and will have a narrower focus of work than public health professionals and thus a smaller set of competency requirements that will be role specific. An example would be First Nations Community Health Representatives who would be expected to possess a sub-set of the core competencies depending upon their specific role.

Address organizational-level competencies. It seems reasonable to seek clarity regarding individual-level competencies before tackling the organizational-level ones.

Address capacity requirements to deliver public health programs. However, core competencies are one of the building blocks required to accomplish this task (see Appendix 1 for further discussion of this point).

Overview of the Process Used to Identify a Set of Core Competencies

The following steps were taken to develop the set of core competencies:

1. **Start with core public health functions:** These are the 5 core functions recommended by ACPH (assessment, surveillance, prevention, promotion, protection).

2. **Identify the core elements that comprise each of the functions.** Need to identify what is actually meant by each of the five functions in order to identify the required competencies.

3. **Map each competency statement from existing core competency sets to the core elements.** Each of the competency statements from four existing sets of core competencies were matched with the most similar core element.

4. **Analyze competencies mapped to common core elements and select/combine competencies to capture key themes.** Many of the core elements had multiple matched competency statements. Needed to assess which statements best described necessary knowledge, skills, and abilities.

5. **Assess pool of selected competencies to eliminate duplication.** Step 4 above reduced duplication among competency statements for core elements mapped to a particular function. This step addressed duplication of statements across the five functions.

6. **Identify and label groups of competencies that are addressing a common theme.** Competency statements reflecting common themes were grouped together to form competency "domains".

The subsequent sections and accompanying appendices of this report will describe in detail the sequential steps taken to develop the set of core competencies. In the interest of keeping this document a manageable size, Appendix 8 and Appendices 9-12 have been provided as separate supplementary documents.

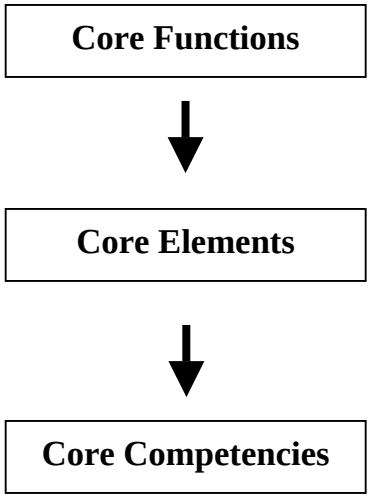
Identifying the Core Competencies

In the development of this project, there was general agreement that the core competencies should be based on the core functions of the public health system. While there has not been official designation of the system's functions, there has been a fair degree of informal consensus regarding the five functions recommended by the Advisory Committee on Population Health (ACPH):[1]

- Population health assessment;
- Health surveillance;
- Disease and injury prevention;
- Health promotion;
- Health protection.

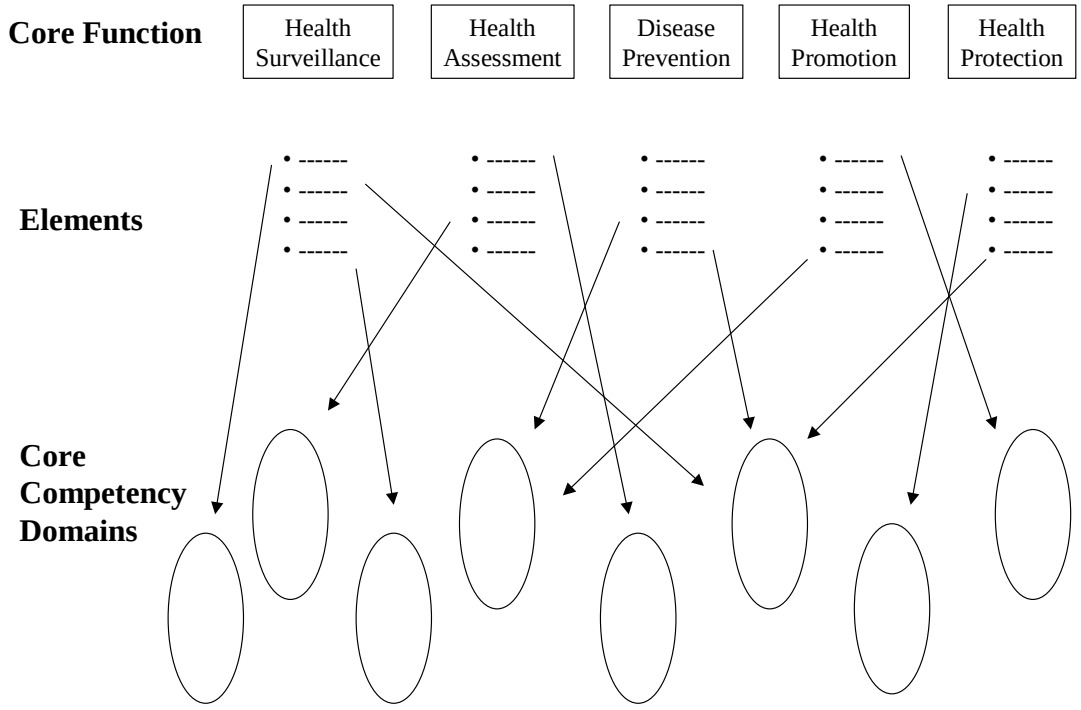
The ACPH and a report by the Institute of Population and Public Health (CIHR) provided general definitions/descriptions of each of the functions (see Appendix 4). There have been some suggestions that additional items should be added to the list of functions. In particular, "advocacy" and "emergency preparedness and response" are the items most frequently identified. It appears that this is predominantly an issue of emphasis, since neither advocacy nor emergency preparedness represent concepts that are unique from the existing five functions. At a minimum, advocacy would be a key component of the health promotion function and emergency preparedness is a key component of health protection. It is not the purpose of this report to resolve this issue. However, from the perspective of identifying core competencies, it is only important to ensure that these two issues are captured, not whether there is a decision for 5 or 7 core functions. In the interest of simplicity and the avoidance of obvious duplication of concepts, the original five ACPH functions will be used in this report as representing the core functions of the public health system.

In order to identify core competencies, there is a need to identify the core components or elements of each of the functions. The intent is to proceed from functions to elements to competencies as shown below.



Through this process, there can be confidence that the core competencies are founded upon the system's core functions. However, recognizing that the functions are not perfectly mutually exclusive and some competencies are common to more than one function, there will still be a need to take the collective set of core competencies that are identified from the core elements and group these into categories or domains representing common themes. Figure 1 illustrates the creation of these competency domains.

Figure 1: Creation of Core Competency Domains from Core-Function Derived Competencies.



It should be noted that this process is the opposite of what was done in the U.S., where the core competencies and their domain groupings were identified first and then reshuffled to link them with the list of essential services.

Despite the intuitive appeal of deriving competencies from the core functions, it might be more straightforward to simply adopt or adapt another group's set of competencies. Six sets of public health core competencies were identified. Appendix 6 provides a listing of each set's competency domains. While there is some commonality between the lists, there is also an obvious lack of convergence. Appendix 2 provides a list of the competencies for four of the competency sets. Preliminary examination of this material did not provide an immediate answer as to which set or specific competencies are the most appropriate for selection.

The presence of the existing competency sets does however, provide an opportunity to potentially avoid drafting all of the core competencies from scratch. This makes particular sense considering the thousands of public health practitioners in other countries who were involved in the drafting and review of the competency sets. The core functions and their associated core elements can then be used to guide the assessment of the existing competency items.

Identifying Elements of Core Functions

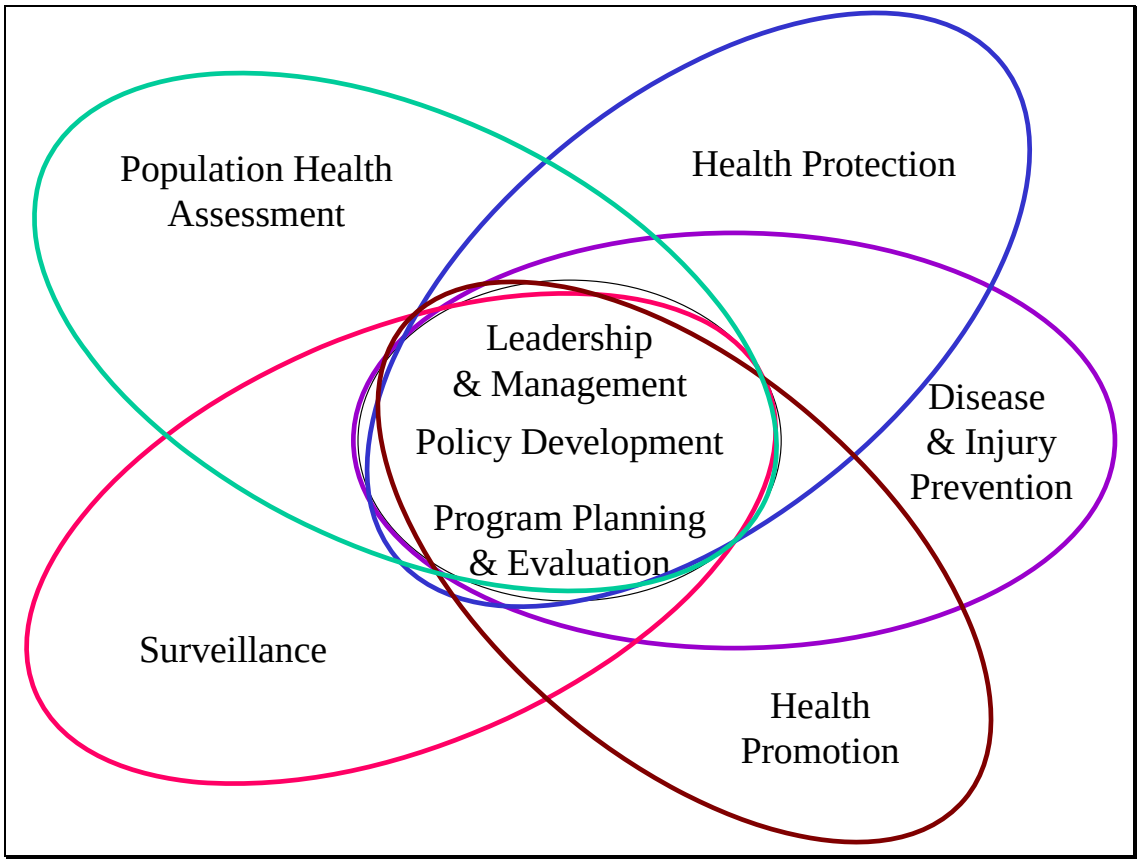
With the exception of health promotion, there are no established frameworks that describe the key components or elements of the functions. To identify the elements for all of the functions, standard public health references were utilized[i]. A draft set of elements was developed and comments sought from workshop participants at the 2004 CPHA Conference in St. John's, Newfoundland and Labrador. Additional items were added and the working group of elements modified (Appendix 5).

Some general principles served as the basis of the creation of the core elements:

- **Comprehensive, but brief/simple**: The focus has been on capturing the critical high level concepts that describe public health practice. At the same time, there has not been an attempt to be exhaustive in attempting to include each and every concept if they could reasonably be captured by a pre-existing element.
- **Clean taxonomy**: The reason for needing all five core functions is that each contributes unique concepts to the overall practice of public health. However, the five functions are not mutually exclusive and therefore some overlap does occur among them. For the purposes of this project, it is desirable to ensure that there is a minimum of overlap of elements with an emphasis on ensuring that key concepts are captured. In practice, most public health programming will involve aspects of most, if not all of the core functions. In other words, it is highly unlikely that someone could work in public health and just do "protection" or "promotion". The reality is that aspects of other functions will be needed. This is consistent with the concept of core competencies in which each public health practitioner will possess a common set of competencies. Some examples of how programs involve each of the functions are provided in Appendix 7.
- **Need to address common concepts**: Recognizing the desire for a clean taxonomy described above, there are clearly going to be some core competencies that are common to all of the functions. For example, program planning and policy development are areas of practice that apply to multiple functions. The identification of "common elements" is an attempt at capturing these types of elements and to avoid unnecessary duplication of items during this developmental stage. Figure 2 is an attempt at showing the presence of overlap of certain aspects of the functions and the existence of some competencies common to all functions.

[i] Ottawa Charter for Health Promotion;[14] Oxford Textbook of Public Health; Maxcy-Roseneau-Last; Epidemiologic methods for health policy;[15] Principles and practice of public health surveillance;[16] etc.

Figure 2: Representation of Overlapping Concepts Between Core Functions



Existing Public Health Core Competency Sets

Of the six public health "core" competency sets represented in Appendix 6, only four of these are intended for the broad population of public health practitioners. The two Australian sets are intended for more highly specialized population groups (MPH graduates, or post-MPH specialized training). In effect, these two sets of competencies are a type of discipline-specific competencies and were not further considered. The remaining four core competency sets were assessed further and are shown in their entirety in Appendix 2. Each will be briefly described.

Council on Linkages Between Academia and Public Health Practice (US)[11]

This is probably the best known set of core competencies for public health. There are 68 competency statements that are grouped into 8 domains. On the Council's website, the competencies have been further broken down by level of proficiency for three staff levels. As a later step, they were reshuffled to be lined up with the list of essential public health services and these are also available on the Council's website. Of the two U.S. based competency sets, only the Council on Linkages set is available on-line and is therefore more amenable to modifications over time.

Public Health Competency Handbook (US)[17]

The Handbook is another source of competencies from the U.S. While the authors imply that their set of competencies are *organizational*-type competencies, they appear to be as much individual-type competencies as any of the other lists. These competencies are based on an earlier draft of the Council on Linkages competency set and therefore share some common features, although with different wording and emphasis. The Handbook's competency list presents the competencies for three settings: individual/client; organization; and community. Perhaps reflecting the substantial involvement of public health in the U.S. in clinical care, the competencies in the individual/client groups tend to focus primarily on the delivery of clinical services. These items do not appear to be consistent with the concept of public health core competencies as it is being used in this report and instead, would be labelled as technical competencies that some particular discipline groups would provide for a limited number of programs (e.g. public health nurses providing care in a sexual health clinic). The individual/client items have therefore been excluded from further consideration, but are provided in Appendix 2 for those who wish to review this decision.

Health Development Agency – Public Health Skills Audit (UK)[18]

The items in this competency set appear in an on-line skill assessment tool allowing practitioners to self-administer the tool and providing graphical print-outs of skill gaps. Most of the skills included in the audit are relatively generic with few items specifically related to the practice of public health and those that are (e.g. epidemiology, population health assessment) are only briefly described.

Skills for Health (UK)[19]

National occupational standards for public health practice were recently released in the UK. The standards have associated competency-like performance criteria and these are the items captured for review. There are over 150 of these performance criteria and the level of detail is greater than any of the other competency sets. The depth of some of the competencies raises the issue as to whether they can be reasonably expected of all public health practitioners (i.e. "core").

The Association of Schools of Public Health (ASPH) has been exploring competency development for the MPH degree for a number of years. With the release of the Institute of Medicine (IOM) report addressing the education of public health professionals for the 21st Century,[20] the ASPH has been taking into consideration the eight areas that the IOM recommended as being of critical importance to public health education in the future: informatics, genomics, communication, cultural competence, community-based participatory research, global health, policy and law, and public health ethics (*Personal Communication, E. Weist, ASPH, May 2004*). This list is not intended to comprehensively reflect the competencies for public health practice, but rather identifies issues that require greater emphasis. At this point, there is no set of core competencies that have been officially approved and applied to MPH curricula in U.S. schools of public health (*Personal Communication, K. Miner, Rollins School of Public Health, July 2004*).

Mapping Existing Competency Sets to the Elements of the Core Functions

Having identified the core elements that comprise the core functions and four sets of core competencies, the next step was to map each of the competency items to the appropriate core element. The resulting table may be found in Appendix 8 (supplementary document). Overall, it was possible to match up competencies with most of the core elements. In some cases, the competencies split and lumped concepts somewhat differently from the core elements, but this is of little consequence. The health promotion strategies from the Ottawa Charter proved to be at too high a level with most of the relevant competencies focussed on the processes to achieve those strategies (e.g. communication, collaboration, etc.). Few competencies matched to disease and injury prevention. To some degree this may have been due to the placement of the competencies under other headings such as health promotion and basic public health sciences. However it is also likely that many of the competencies for disease and injury prevention are technical competencies that would not be expected of all practitioners (e.g. giving immunizations, tobacco cessation counselling, treatment of STIs, supporting behaviour change in health care professionals, content knowledge for specific diseases, etc.).

The table in Appendix 8 provides an interesting perspective on the different emphasis and levels of detail among the sets of core competencies. This observation however, does not help determine the most appropriate competencies or pre-existing competency set for use in Canada. To move towards this goal, the competencies that mapped to each of the core functions and constituent elements were assessed to:

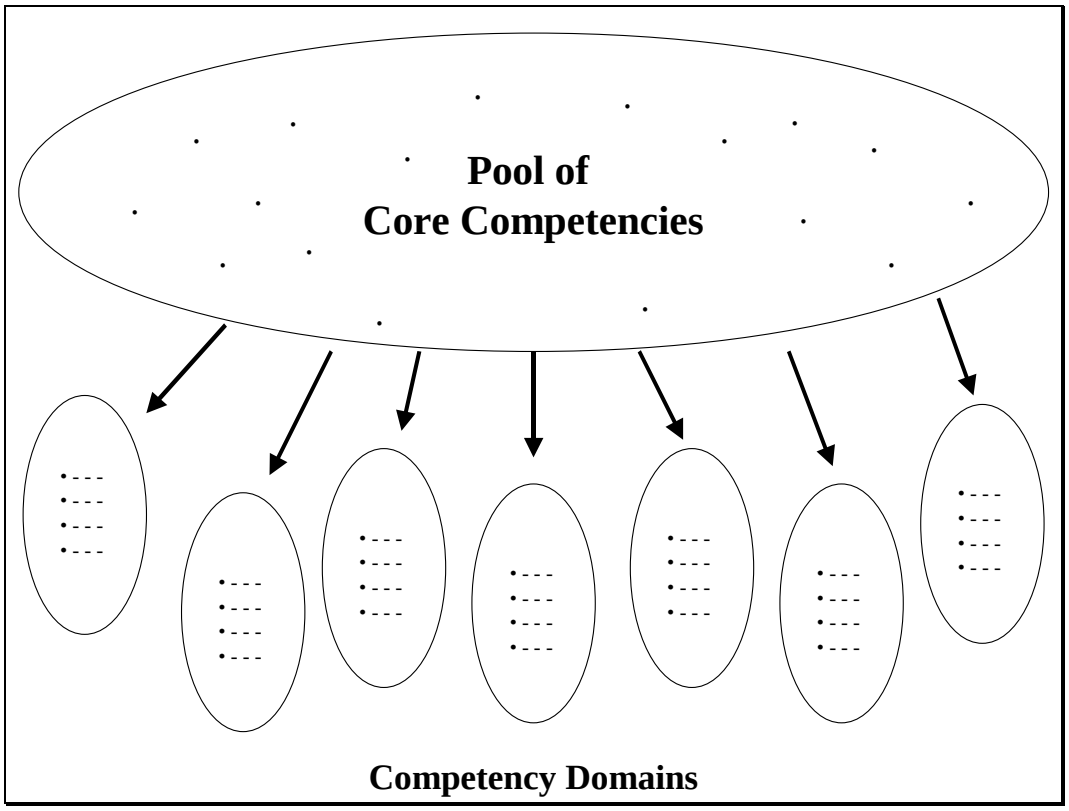
- Identify common/key themes;
- Identify areas of potential overlap within function areas;
- Assess the levels of detail of the competency statements in the context of the previously stated principles (i.e. comprehensive, simple, brief, and striving for clean taxonomy).

Particular challenges were experienced with the many competencies that mapped to “leadership and management” and “partnership and collaboration”. These were assessed on their own to identify the most appropriate competency items.
A preliminary set of 88 competencies was initially identified through this process. To assist the tracking of the hundreds of competencies considered, separate tables were developed for competencies that were included and excluded (Appendices 9 and 10 – supplementary document). For included competencies, any comments/issues were identified. In some instances, it appeared that there was a need to modify or blend existing competency statements and the modified item is then provided. For excluded competencies, a brief reason for exclusion is provided.

Identification of Competency Domains

The preliminary list of 88 competencies had only been assessed within the context of their mapping to a particular function/element. This could mean that overlapping competencies might exist that had been mapped to elements of different functions. To identify potential duplications as well as to provide better organization of the competencies, the statements were grouped into a series of domains (Figure 3).

Figure 3: Dividing the Pool of Core Competencies into Domains.



Of the four competency sets, the domains from the Council on Linkages and the Competency Handbook (Appendix 6) appeared to have the greatest potential usefulness and have a fair bit of similarity. Competencies were grouped by common themes and compared with the two sets of domains. The resulting set of recommended domains are a blend of the two with a predominance of the Council on Linkages domains (Table 1).

Table 1: Competency Domains of the Council on Linkages, the Competency Handbook and Those Recommended for Canadian Core Competencies.

Council on Linkages	Competency Handbook	Recommended Domains
Analytic/assessment skills;	Assessment, planning and evaluation	Analysis and assessment
Policy Development and Program planning skills;		Policy development and program planning
Communication skills;	Communication;	Communication
Cultural competency skills;		Socio-cultural competencies
Community dimensions of practice skills;	Partnership and collaboration;	Partnership and collaboration
Basic public health sciences skills;		Core public health sciences
Leadership and systems thinking skills;	Visionary leadership;	Leadership and systems approaches

	Systems thinking;	
Financial planning and management skills;		
	Information management;	
	Promoting health and preventing disease.	

Both the Council on Linkages and the Competency Handbook contained unique domains that had to be considered:

- Financial planning and management skills (Council on Linkages): many of these types of items were not viewed as core competencies since they would not be expected of all public health practitioners. Some items have been included but these were not of sufficient number to warrant their own domain;
- Information management (Competency Handbook): there is little doubt that there is a need for public health practitioners to possess competencies in this area. Many of the competencies included in the Handbook in this area appear to be organizational level competencies. Competencies for public health informatics have been identified in the U.S. and these were further reviewed (see Appendix 3 for the complete list). The management of informatics projects is not a core competency area. The use of information technology is much more relevant, but the items appear sub-competencies of the Council's existing competencies. It was therefore determined that a separate domain for information management was not required.
- Promoting health and preventing disease (Competency Handbook): these are core functions, not competency domains.
- Community dimensions of practice (Council on Linkages) versus Collaboration and partnership (Competency Handbook): either title would be acceptable, but collaboration and partnership is more explicit about this key aspect of public health practice.

Analysis of Initial Competency Items

The initial pool of competency items was grouped into the chosen competency domains. In reality, this was not a sequential step, but an iterative process. Competency items within domains were compared to look for overlap and duplication of concepts. In selected instances, the wording of selected items was re-compared with excluded items and modifications made where required.

A competency took kit from U.S. suggests that competencies should be comprised of three components:[12]

- Action verb (observable or measurable performance of a worker)
- Content (subject matter, type of performance, specific task)
- Context (limitations or conditions of work environment).

Each of the competencies was reviewed for these characteristics as well as whether it was immediately possible to apply the competency in creating a learning objective. Appendix 11 (supplementary document) provides a summary of this information.

Selection of Set of Core Competencies

A total of 62 competencies were included within the final recommended set of draft core competencies. Forty-two of the 62 competencies (68%) were derived from the Council on Linkages, with 8 from the Competency Handbook, 7 from Skills for Health, 4 of blended origins, and one new item. Because of the extent of use of the Council on Linkages set of competencies, excluded items from this competency set were re-checked to ensure that no items of unique importance had been missed (Appendix 12 – supplementary document).

Figure 4 illustrates the overall process of this project. Starting with the core functions of public health, core elements were defined, and a pool of core competencies identified, which were then divided into core competency domains.

Figure 4: From Functions to Competency Domains - Illustrative Summary of the Development of a Set of Core Competencies

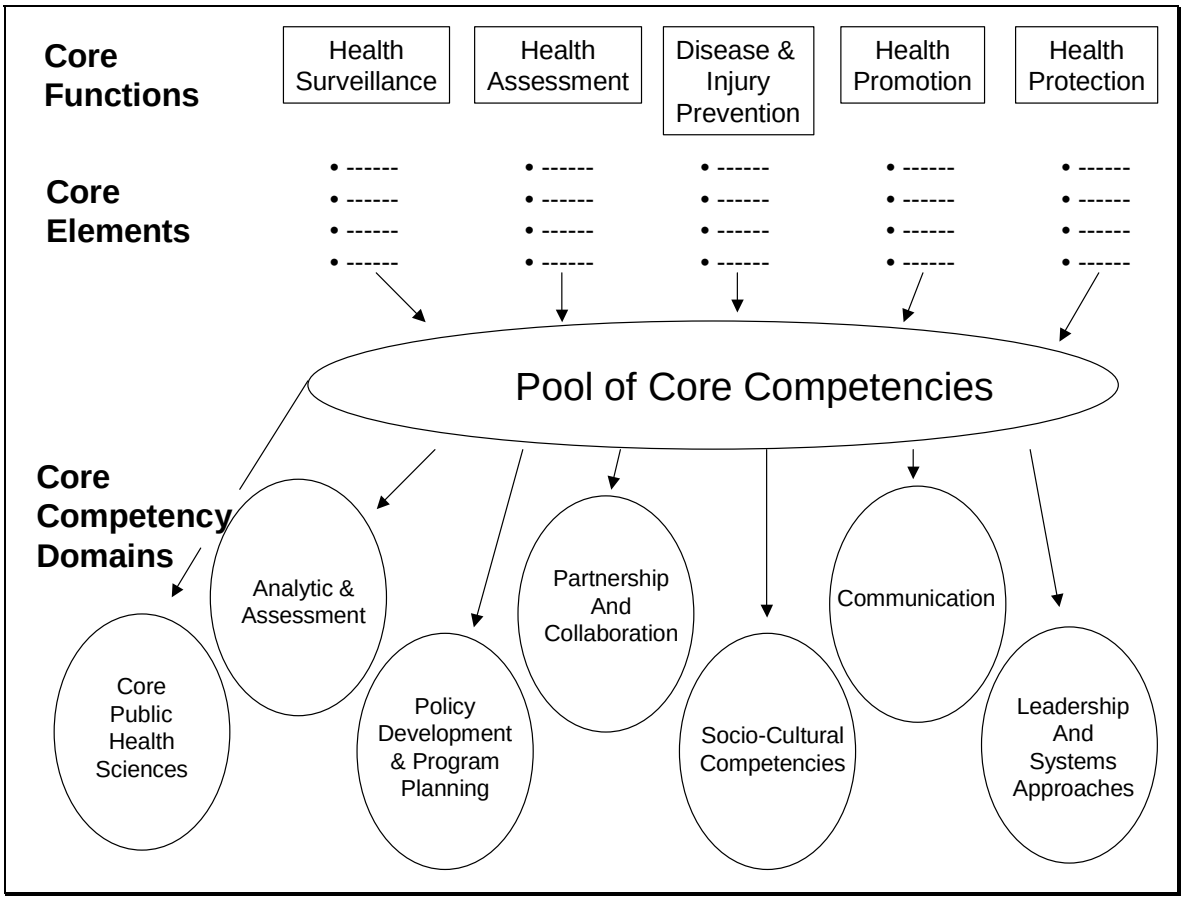


Table 2 provides a listing of the recommended set of draft core competencies that could be used as the basis for further consultation in Canada. Several points need to be made to assist the review of these items. The first is that it is important to view the competencies as an entire collective group. There is the potential when looking whether a specific skill set is captured to look solely at one or two competencies and perhaps finding them insufficient. While this may be the case, it may be that the required skills are spread across more than one domain. This is particularly likely if one is looking at relatively complex concepts that require a range of skills. The following example may help illustrate this point.

One might scan the competencies looking for whether being able to do "community development" is captured. An initial scan of the competencies does not find this specific wording present. This does not mean it is not included. If one thinks of working with a particular neighbourhood to do community development then it will require the following:

- Need to assess what are the health issues and existing resources of that neighbourhood. This will require several competencies from the Analytic and Assessment Domain;

- Need to solicit input and partner with existing groups, agencies and organizations. This will require several competencies from the Partnership and Collaboration Domain.
- Need to advocate for the community. This will require competencies for advocating for individuals and communities, as well as for programs and services.
- Need to be able to communicate with community members and decision makers. This will require several competencies from the Communication and Socio-Cultural Competencies Domains.
- Need to develop and assess policy options to address the priority issues. This will require several competencies form the Policy Development & Program Planning Domain.

The core competencies set attempts to capture the broad range of skills that a public health practitioner requires to be able to take a public health approach to population health issues. It is critically important to view them as a package of skills that a practitioner possesses since they complement each other in order to fulfill the public health functions.

An individual practitioner may look at the set of competencies and state that they do not know how to do some of the competencies. This raises the next point of proficiency. While the core competencies are meant to apply to the broad practice of all public health practitioners, it is only reasonable that different practitioners will have different levels of ability for different competencies dependent on their level of training and their role within the organization. For example, not all practitioners are going to know how to develop and present a budget. However, one would expect that all practitioners would at least be aware of the budget process and can contribute to the program's ability to develop and maintain their budget. While no attempt has been made in this initial step of developing a draft set of competencies to apply proficiency expectations by level of the organization, this may need to be considered in the future.

In addition to applying the competencies to the different layers within an organization (e.g. front-line, supervisor, management), the competencies also need to be able to be applied to different levels of the public health system (e.g. local/regional, provincial/territorial, federal). This creates the need to look at competencies broadly. For example, the Policy Development & Program Planning Domain includes the following competency: "Develops a plan to implement policy, including goals, outcome and process objectives and implementation steps." Policy is being used here to describe the decisions that are made to take action to accomplish some purpose. All organizations have policies, although they tend to make different kinds of policy. The decisions made by Cabinet, by the Chief Medical Officer of Health, by a local Board of Health, or by a program manager are all examples of policies even though they may not be explicitly labelled or even recognized as such. Once the competencies are being used for particular purposes in specified settings (e.g. assessment of training needs, curriculum development), there will be an opportunity to more clearly describe what they include.

The last point is that in preparing the draft set of core competencies, a decision had to be made regarding the phrasing of the competencies. There appears to be no explicit rule regarding this issue and mainly depends on the implicit lead-in phrase to each competency. Two potential choices include:

1. A public health practitioner is able to … "identify relevant and appropriate data and information sources."

2. A public health practitioner… "identifies relevant and appropriate data and information sources."

This issue appears to be one primarily of style and the consensus of the working group advising the project consultant was to go with the first choice. Because the original competency sets had different phrasing styles, items were adapted as required to reflect the selected style.

Table 2: Recommended Set of Draft Core Public Health Workforce Competencies

1 - Core Public Health Sciences Domain
A public health practitioner is able to… 1.1. Understand the historical development, structure, and interaction of public health and health care systems at the local, provincial/territorial, national, and international levels 1.2. Understand the concepts of health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of, and decision making about, health services 1.3. Apply the basic public health sciences including behavioural and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries 1.4. Identify and apply basic research methods used in public health 1.5. Develop a lifelong commitment to rigorous critical thinking 1.6. Identify and retrieve current relevant scientific evidence 1.7. Review and critically appraise the evidence for public health interventions 1.8. Identify the role of evidence in developing health policies and programs and appropriately apply evidence
2 - Analysis and Assessment Domain
A public health practitioner is able to… 2.1. Define a problem 2.2. Identify relevant and appropriate data and information sources 2.3. Collect accurate quantitative and qualitative primary data when secondary data is unavailable 2.4. Identify community assets and available resources 2.5. Determine appropriate uses and limitations of both quantitative and qualitative data 2.6. Evaluate the integrity and comparability of data and identify gaps in data sources 2.7. Obtain and interpret information regarding risks and benefits to the community 2.8. Partner with communities to validate and attach meaning to collected quantitative and qualitative data 2.9. Make relevant inferences from quantitative and qualitative data 2.10. Recognize how the data illuminates ethical, political, scientific, economic, and overall public health issues 2.11. Identify relationships, trends, and patterns in health assessment information and make appropriate recommendations on further investigations or actions that should be taken 2.12. Understand cost-effectiveness, cost-benefit, and cost-utility analyses 2.13. Apply ethical principles to the collection, maintenance, use, and dissemination of data and information 2.14. Apply data collection processes, information technology applications, and computer systems storage/retrieval strategies

3 - Policy Development and Program Planning Domain

A public health practitioner is able to…

3.1. State policy options and write clear and concise policy statements
3.2. Articulate the health, economic, administrative, legal, social, and political implications of each policy option
3.3. State the feasibility and expected outcomes of each policy option
3.4. Utilize current techniques in decision analysis and health planning
3.5. Decide on the appropriate course of action
3.6. Develop a plan to implement policy, including goals, outcome and process objectives, and implementation steps
3.7. Monitor and evaluate implementation of interventions for their intended and unintended effects, costs, quality, and acceptability
3.8. Develop and present a budget
3.9. Develop strategies for determining budget priorities
3.10. Identify, interpret, implement, and understand the limitations and uses of public health laws, regulations, and policies
3.11. Prepare for and contribute to the management of incidents, outbreaks and emergencies

4 - Partnership and Collaboration Domain

A public health practitioner is able to…

4.1. Describe the role of governments and community partners in the delivery of public health services
4.2. Identify how public bodies and private organizations and practitioners operate within a community
4.3. Establish and maintain linkages with community leaders and other key stakeholders
4.4. Solicit input from individuals and organizations
4.5. Support governments and community partners in their efforts to improve community quality of life
4.6. Utilize leadership, team building, negotiation, and conflict resolution skills to build community partnerships
4.7. Collaborate with governments and community partners in common and coordinated efforts
4.8. Advocate for individuals and communities on aspects which will improve their health and wellbeing
4.9. Facilitate a dialog among governments and community partners about strategies to attain and sustain healthier communities

5 - Communication Domain

A public health practitioner is able to…

5.1. Communicate clearly and concisely
5.2. Listen to others in an unbiased manner, respect points of view of others, and promote the expression of diverse opinions and perspectives
5.3. Provide health status, demographic, statistical, programmatic, and scientific information tailored to professional and lay audiences
5.4. Understand social marketing principles and consumer behaviour
5.5. Use the media, advanced technologies, and community networks to receive and communicate information
5.6. Advocate for public health programs and resources

6 - Socio-Cultural Competencies Domain

A public health practitioner is able to…

6.1. Utilize appropriate methods for interacting sensitively, effectively, and professionally with persons with diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages, gender, health status, and lifestyle preferences
6.2. Identify the role of diverse population characteristics in determining the delivery of public health services
6.3. Develop and adapt policies and program delivery that responds to diversity in population characteristics
6.4. Understand the importance of a diverse public health workforce

7 - Leadership and Systems Approaches Domain

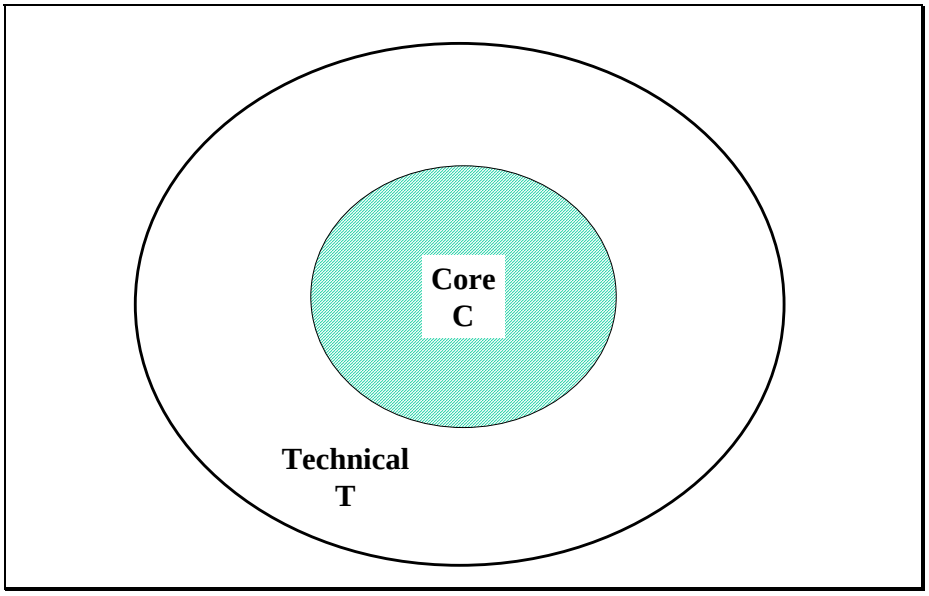
A public health practitioner is able to…

7.1. Know public health organization mission and priorities
7.2. Operationalize the mission of the organization within personal or unit scope of work.
7.3. Identify internal and external issues that may impact delivery of essential public health services (i.e., strategic planning)
7.4. Ethically manage self, people and resources
7.5. Help create key values and shared vision and use these principles to guide action
7.6. Understand and support the contribution of other government and community partner programs relative to achieving the public health vision and mission
7.7. Understand and incorporate international best practices
7.8. Contribute to team and organizational learning
7.9. Contribute to improvements in the workplace environment (improve work activities, recommend improvements to plans)
7.10. Contribute to development, implementation, and monitoring of organizational performance standards

Appendix 1 – Further Description of Individual-Type Competencies and Their Potential Uses

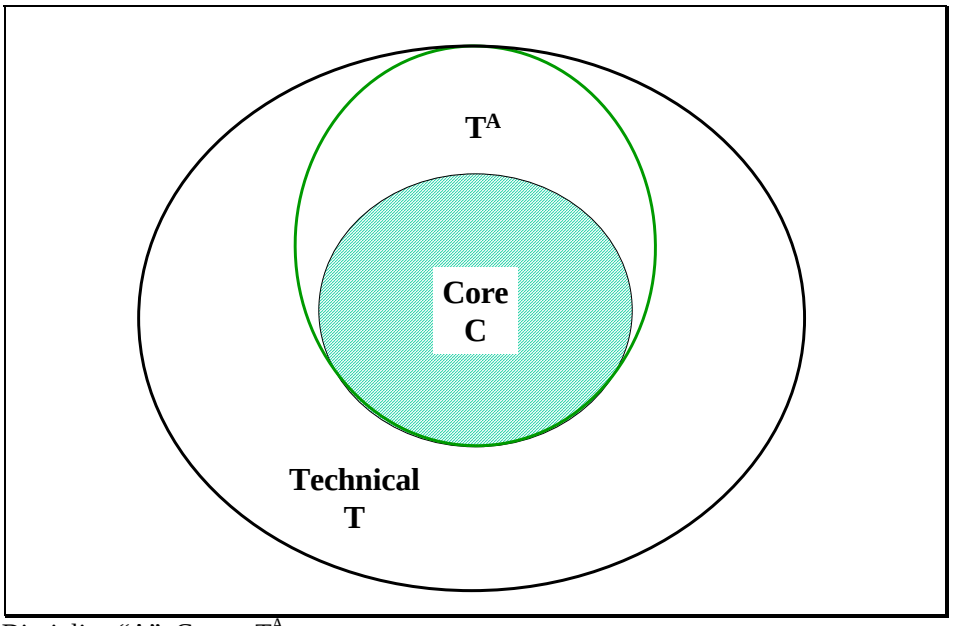
The main body of this report defines core, technical, and discipline-specific competencies. A variety of additional types of competencies are well described in other sources.[9,12] Figure 5 illustrates that by definition, core and technical competencies are mutually exclusive. Together, they encompass the universe of individual-level competencies. The core competencies form the central core or foundation for public health practice upon which additional technical competencies are built or added.

Figure 5: Representation of the "Universe" of Core and Technical Competencies



Discipline-specific competency sets include the core competencies and the particular technical competencies that define a particular discipline. In Figure 6, a hypothetical discipline “A” is represented by including the core competencies and a certain number of technical competencies (T^A).

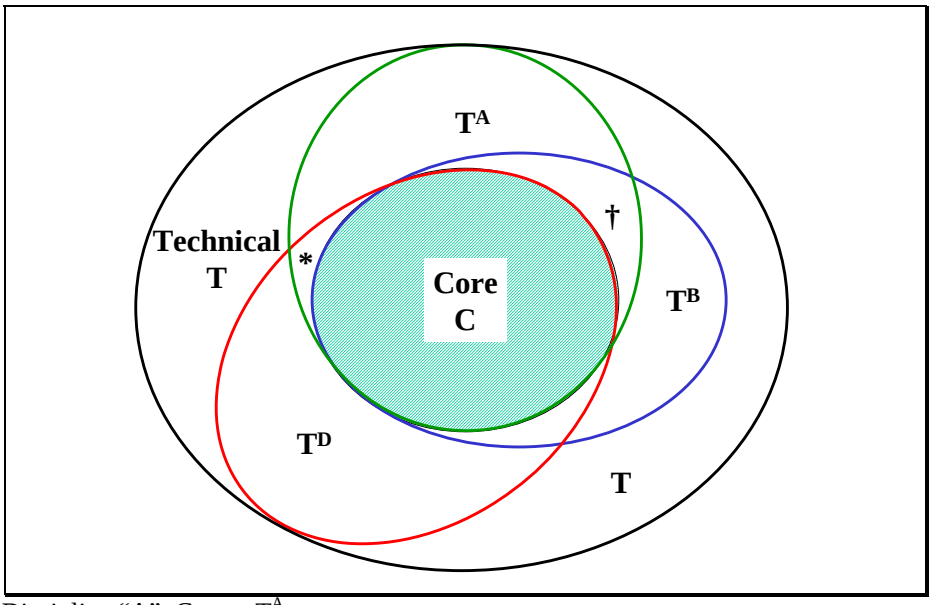
Figure 6: Discipline-Specific Competency Set for Hypothetical Discipline "A"



Discipline "A": Core + T^A

Any one discipline will possess only some of the technical competencies required by the public health system. Figure 7 adds two additional hypothetical disciplines. Since the core competencies are the common knowledge, skills and abilities that transcend disciplinary boundaries, they are reflected in all of the discipline-specific sets. Some overlap has been shown between the technical competency components of different disciplines (represented by the areas marked "*" and "†") to serve as a reminder that the individual technical competencies are not necessarily unique to a particular discipline. It is the *combination* of core and technical competencies, in depth and breadth, which defines a discipline and its potential areas of contribution to the public health workforce.

Figure 7: Three Hypothetical Discipline-Specific Competency Sets



Discipline "A": Core + T^A
Discipline "B": Core + T^B
Discipline "D": Core + T^D
"*": technical competencies shared by disciplines "A" and "D"
"†": technical competencies shared by disciplines "A" and "B"

While only three hypothetical disciplines are shown in Figure 7, as further disciplines were added to the diagram, all of the technical competencies would be included in at least one discipline's competency set. It should be noted that public health is an extremely broad and diverse field. For example, the U.S. CDC employs individuals from 170 different disciplines.

Technical Competencies

The main body of the document identifies technical competencies as those that are not common to all public health practitioners, but are needed to fulfill public health core functions and programs. There are many public health technical competencies and the following list provides just a few examples:

- Data analysis: GIS mapping, cluster analysis; multi-variate analysis, etc.;
- Informatics: database design, management and maintenance; system architecture;
- One-to-one interventions: counselling, client assessment, case management.

It is not entirely clear whether "technical" is the most appropriate term to describe competencies that are not common to all public health professionals. Other terms are possible including "specialized" and "function/job specific", but neither appears to be superior and carry with them other potential meanings. The dictionary definition of "technical" includes the following:

1. Having special skill or practical knowledge especially in a mechanical or scientific field: *a technical adviser.*
2. Used in or peculiar to a specific field or profession; specialized; *technical terminology.*

Based on the preceding dictionary definitions, it appears that technical is an appropriate term at this point.

Discipline-Specific Competencies

Many of the technical competencies are relatively specialized skills, but are not necessarily the sole domain of any particular discipline. It is the intrinsic nature of public health that for many competency areas, there are a variety of training paths one could take to acquire particular competencies. For example, skills in the use and application of GIS mapping may be found in the fields of epidemiology, social geography, community medicine, and probably others. While there may be some competencies that are uniquely held by particular disciplines, the defining characteristic of a discipline is generally not one or two unique skill sets, but rather the depth and breadth of a *set* of competencies that is expected of them. Even so, this defined range describes only what is expected at a minimum of discipline members. Typically there can be tremendous specialization within a discipline so that some members may possess certain additional technical competencies and others not.

A "discipline" may include specific professions (e.g. community medicine specialists, public health inspectors, etc.), but could also be applied to the products of particular training programs (e.g. MPH graduates).

One of the goals of identifying core competencies is to be able to get individuals from different disciplines to see common ground between those disciplinary groups. Ideally, the core competencies should be the starting point for the development of discipline-specific competency sets.

Program-Specific Competencies

The preceding discussion has only been addressing the concept of individual-level competencies. The delivery of public health programs and the fulfillment of public health functions depend upon teams of individuals working together towards a common purpose. For example, within a local public health organization, multi-disciplinary teams will be responsible for the delivery of specific programs. For each program, there will be an expected set of program-related activities. The performance of these is dependent on a set of competencies that are needed to deliver that program. This is what is meant by program-specific competencies.

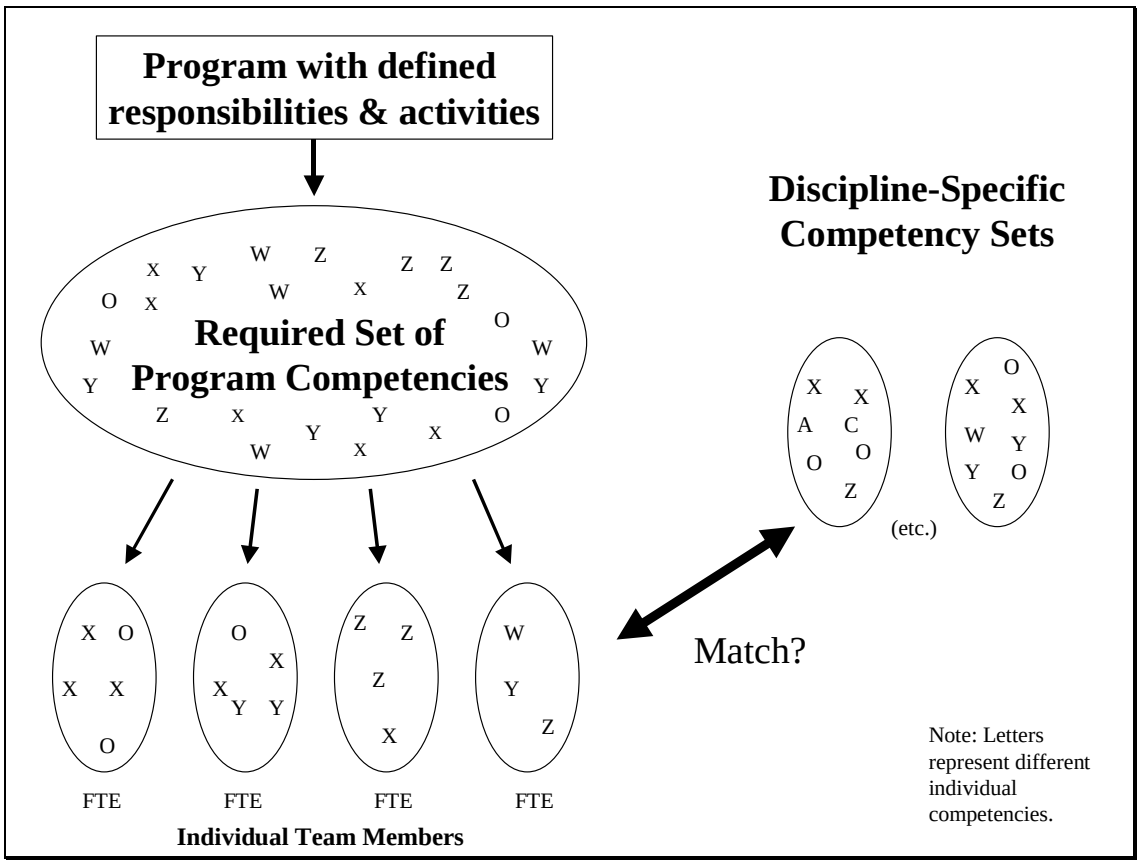
Figure 8 provides a diagrammatic representation of a required set of program-specific competencies that are required for the delivery of a particular program. This set or pool of required competencies needs to be logically distributed among the individual positions that comprise the program team. The discipline-specific competency sets are relevant to the extent that they provide an existing package of competencies that match the program position competency requirements and/or provide rare or unique competencies that are required and are only available from a limited number of disciplines.

The set of program-required competencies and their allocation to specific positions provides an initial indication of the capacity required to be able to deliver the program. Of additional importance is the volume of service that needs to be considered in identifying the number of any one position-type.

To make this example more concrete, one can imagine that this program is a communicable disease (CD) surveillance and control team within a local/regional public health department. Existing documents (hopefully) specify the required activities that the team is to engage in. In terms of core competencies, there will need to be individuals who are particularly proficient in information management, epidemiology, communication, and partnership and collaboration. A number of technical skills will also be required in these and other domains. In creating the CD surveillance and control team, the manager will need to envision how different team members will need to have particular combinations of certain competencies with the overall team possessing all of the necessary competencies to fulfill its responsibilities. Job descriptions would identify the required breadth and depth of core and technical competencies required for each position. In filling those positions, discipline-specific competency sets (e.g. public health nurses, public health inspectors, epidemiologist, etc.) are relevant to the extent that they match up with the identified positions and/or possess required unique competencies. Realistically, in creating position types, the manager needs to be aware of the likelihood of particular competency combinations existing in the market of available practitioners.

Regardless of the size of the population being served, there will likely be an expected core group of individuals that collectively match up with the pool of required competencies. Some aspects of the activities (e.g. case investigators) will be strongly influenced by the size or nature of the population base being served and the number of these positions will need to vary with these factors.

Figure 8: Relationship Between Program-Specific and Discipline-Specific Competencies.



In summary, at the program level, the competency requirements are being driven by the program-specific responsibilities and activities/services. The core and technical competencies are the basic building blocks for describing program requirements, identifying capabilities of individual team members, and comparing position requirements with discipline-specific competency sets.

Appendix 2 - Existing Core Competency Sets

Council on Linkages Between Academia and Public Health Practice (U.S.)

Analytic Assessment Skills

- Defines a problem
- Determines appropriate uses and limitations of both quantitative and qualitative data
- Selects and defines variables relevant to defined public health problems
- Identifies relevant and appropriate data and information sources
- Evaluates the integrity and comparability of data and identifies gaps in data sources
- Applies ethical principles to the collection, maintenance, use, and dissemination of data and information
- Partners with communities to attach meaning to collected quantitative and qualitative data
- Makes relevant inferences from quantitative and qualitative data
- Obtains and interprets information regarding risks and benefits to the community
- Applies data collection processes, information technology applications, and computer systems storage/retrieval strategies
- Recognizes how the data illuminates ethical, political, scientific, economic, and overall public health issues

Policy Development/Program Planning Skills

- Collects, summarizes, and interprets information relevant to an issue
- States policy options and writes clear and concise policy statements
- Identifies, interprets, and implements public health laws, regulations, and policies related to specific programs
- Articulates the health, fiscal, administrative, legal, social, and political implications of each policy option
- States the feasibility and expected outcomes of each policy option
- Utilizes current techniques in decision analysis and health planning
- Decides on the appropriate course of action
- Develops a plan to implement policy, including goals, outcome and process objectives, and implementation steps
- Translates policy into organizational plans, structures, and programs
- Prepares and implements emergency response plans
- Develops mechanisms to monitor and evaluate programs for their effectiveness and quality

Communication Skills

- Communicates effectively both in writing and orally, or in other ways
- Solicits input from individuals and organizations
- Advocates for public health programs and resources
- Leads and participates in groups to address specific issues
- Uses the media, advanced technologies, and community networks to communicate information

- Effectively presents accurate demographic, statistical, programmatic, and scientific information for professional and lay audiences
- Listens to others in an unbiased manner, respects points of view of others, and promotes the expression of diverse opinions and perspectives

Cultural Competency Skills

- Utilizes appropriate methods for interacting sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages and lifestyle preferences
- Identifies the role of cultural, social, and behavioral factors in determining the delivery of public health services
- Develops and adapts approaches to problems that take into account cultural differences
- Understands the dynamic forces contributing to cultural diversity
- Understands the importance of a diverse public health workforce

Community Dimensions of Practice Skills

- Establishes and maintains linkages with key stakeholders
- Utilizes leadership, team building, negotiation, and conflict resolution skills to build community partnerships
- Collaborates with community partners to promote the health of the population
- Idenitifies how public and private organizations operate within a community
- Accomplishes effective community engagements
- Identifies community assets and available resources
- Develops, implements, and evaluates a community public health assessment
- Describes the role of government in the delivery of community health services

Basic Public Health Sciences Skills

- Identifies the individual's and organization's responsibilities within the context of the Essential Public Health Services and core functions
- Defines, assesses, and understands the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
- Understands the historical development, structure, and interaction of public health and health care systems
- Identifies and applies basic research methods used in public health
- Applies the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
- Identifies and retrieves current relevant scientific evidence
- Identifies the limitations of research and the importance of observations and interrelationships
- Develops a lifelong commitment to rigorous critical thinking

Financial Planning and Management Skills

- Develops and presents a budget
- Manages programs within budget constraints
- Applies budget processes
- Develops strategies for determining budget priorities
- Monitors program performance
- Prepares proposals for funding from external sources

- Applies basic human relations skills to the management of organizations, motivation of personnel, and resolution of conflicts
- Manages information systems for collection, retrieval, and use of data for decision-making
- Negotiates and develops contracts and other documents for the provision of population-based services
- Conducts cost-effectiveness, cost-benefit, and cost-utility analyses

Leadership and Systems Thinking Skills

- Creates a culture of ethical standards within organizations and communities
- Helps create key values and shared vision and uses these principles to guide action
- Identifies internal and external issues that may impact delivery of essential public health services (i.e., strategic planning)
- Facilitates collaboration with internal and external groups to ensure participation of key stakeholders
- Promotes team and organizational learning
- Contributes to development, implementation, and monitoring of organizational performance standards
- Uses the legal and political system to effect change
- Applies theory of organizational structures to professional practice

Public Health Competency Handbook (U.S.)

Note: The Handbook presents the competencies for three types of settings: organization; community; and individual/client. The individual/client items are shown separately and were not given further consideration.

1. VISIONARY LEADERSHIP / EMPOWERMENT (collaborative leadership to reach the shared vision)

Organization:

- Promotes development of a shared vision of organizational success.
- Assists units in aligning their visions with organizational vision.
- Facilitates process of defining organization's mission and core values.
- Is able to operationalize the mission of the organization within personal or unit scope of work.
- Promotes need to understand "present reality" to determine strategies to reach "vision of "preferred future."
- Understands and supports the contribution of other agency programs relative to achieving the public health vision, mission.

Community:

- Promotes the formulation of a collective vision of a healthier community.
- Facilitates a dialog among multi-sector organizations and stakeholders about strategies to attain and sustain healthier communities.
- Participates with other components in community health system to create systems that support health.
- Influences the use of community resources to promote public health mission and vision.

- Supports both community institutions and organizations in their efforts to improve community quality of life.

2. COMMUNICATION (dynamic process grounded in respect for diverse voices)

Organization:

- Knows public health organization mission and priorities.
- Listens and learns in order to adapt personal and professional behavior to culturally unique needs of organization members.
- Speaks and writes clearly and concisely in language tailored to the audience.
- Is able to project the mission of the organization to constituencies within organization.
- Uses technology to facilitate communication and dialogue among individuals and groups within the organization.

Community:

- Understands social marketing principles and consumer behavior.
- Projects message of public health to community constituents with level and content of message appropriate to audience.
- Promotes culturally sensitive and relevant dialogue regarding community health issues.
- Able to work with media to increase public's knowledge of and support for public health.

3. INFORMATION MANAGEMENT (using technology to manage the transfer of information to end users)

Organization:

- Collects information regarding current health research, treatment effectiveness, and/or innovative prevention or treatment programs for dissemination within organization.
- Collects and utilizes data on community infrastructure including social, economic, and political indicators.
- Collects data on organization operations: programs, resources, services, constituents/clients served, etc. for planning, evaluation, and accountability purposes.
- Promotes use of appropriate technology to facilitate data organization, retrieval, and utilization.
- Provides on-going training and technical assistance to organizational members to improve data collection methods and enhance utilization of information.

Community:

- Identifies and organizes information on community resources: social services, educational, political, business, faith communities, support systems, etc.
- Identifies and organizes information about local health (public and private) system: referral networks, providers, prevention-oriented organizations, alliances, etc.
- Collaborates with other health system and public agencies to facilitate the transmission of data in format that can be utilized by policy makers.

4. ASSESSMENT, PLANNING, & EVALUATION (the continuous quality improvement cycle)

Organization:

- Plans and maintains population and environmental surveillance systems to identify health problems in community by magnitude, duration, trends, and population at risk.
- Collects and utilizes community information and data that provide a context for analyzing health problems and seeking acceptable interventions.
- Evaluates interventions according to effectiveness, economic feasibility, and acceptability to targeted population and community at large.
- Assesses the capacity of the organization to meet community needs and expectations.
- Identifies the need for, and the direction of, adaptation and change within the organization.

Community:

- Surveys community as to perceived needs and priorities.
- Communicates health status data to community.
- Develops process for participatory planning with community.
- Develops strategy to strengthen community infrastructure and to mobilize community support.

5. PARTNERSHIPS AND COLLABORATION (optimizing performance through shared resources and accountability)

Organization:

- Catalyzes and facilitates organizational change through building a shared vision of success.
- Encourages cross training and transfer of skills.
- Provides opportunities for diverse talents and perspectives to be utilized in cross-functional councils or quality improvement teams.
- Promotes an organizational environment which facilitates team building, team problem solving, self-managing work groups.

Community:

- Emphasizes service delivery built on community partnerships and coalitions.
- Collaborates with other agencies in common and coordinated efforts.
- Is knowledgeable about community decision-making dynamics and deliberations.
- Knows how to access community resources to meet needs and improve health status.
- Utilizes group processes to organize and catalyze community constituents to improve health status.

6. SYSTEMS THINKING (future-oriented problem solving and decision making)

Organization:

- Provides an environment for creating, acquiring, and transferring knowledge leading to behavior change and organizational improvement.
- Promotes and manages change as a process for positive growth and continuous quality improvement.
- Generates organizational policy, processes, and procedures to support performance of core public health functions and provision of essential public health services.
- Acknowledges that a problem exists and involves stakeholders at all levels of organization in solution.
- Understands that public health organization is one component of dynamic community health system in a time of rapid change and role redefinition.

Community:

- Identifies the primary cause and direct and indirect contributing factors of health issues in complex sociocultural settings.
- Provides health-related data and information showing relationships, trends, and patterns in a format that is clear and useful to community policy makers.
- Anticipates consequences of alternate solutions to community health problems.
- Involves relevant stakeholders in both the definition of the problem and the formulation, implementation, and evaluation of the solution.
- Participates with other components of health system in assuring conditions within community in which people can be healthy.

7. PROMOTING HEALTH AND PREVENTING DISEASE (putting the art and the science of public health into action)

Organization:

- Maintains surveillance methodology to determine the incidence and prevelence of disease in individuals and community.
- Knows current guidelines for prevention, disease intervention, and therapy, including the etiologic, risk and contributing factors to communicable disease.
- Provides technical assistance in epidemiological interpretation of data.
- Maintains established professional standards (i.e., medical licensure, credentialing, certification, etc.).

Community:

- Knows and communicates morbidity and mortality patterns in communities.
- Acts as community resource through surveillance and investigation of health hazards.
- Provides recommendations to community constituents recarding the improvement of health status through interruption of diease transmission patterns and modification of environmental, occupational and behavioral risk factors.
- Provides training and technical assistance to employers/businesses related to improved sanitation and/or safety techniques.
- Enforces current standards of sanitation and safety.

- Knows other community resources with similar mission and/or responsibilities.

ADDITIONAL INDIVIDUAL/CLIENT COMPETENCIES

- Promotes sense of self-worth in client.
- Facilitates process of empowerment for clients through knowledge of risk factors for disease and control of personal behavior.
- Is supportive to client in choosing health-promoting lifestyles.
- Is receptive to new ideas and innovative solutions and modifies own thinking and behaviour accordingly.
- Demonstrates respect for unique characteristics of client as individual.
- Listens to client; assists client in identifying his/her needs.
- Demonstrates cultural sensitivity in interactions with client.
- Teaches and counsels client at level of understanding.
- Accesses and updates health services treatment and case management plans.
- Organizes referral data and gives appropriate information to clients regarding public health and other community resources.
- Facilitates the sharing of client information by providers within legal and ethical constraints (i.e., immunizations, screening, etc.)
- Assesses individual client needs based on risk factor profile, medical history and current symptoms.
- Plans treatment with client to promote compliance, alleviate problem and prevent recurrence.
- Evaluates treatment: outcome, compliance and status of high risk behavior.
- Performs systematic collection, review and analysis of data on client users of public health services in order to identify unmet needs and to improve health service delivery.
- Increases treatment compliance of high risk individuals through interaction with families and/or other sources of support.
- Functions as a member of a case management team.
- Tracks individual clients and his/her interaction with other agencies in social and health systems.
- Facilitates interaction among groups of clients and providers to communicate needs and identify effective solutions to health problems.
- Looks at problems from the client's perspective.
- Involves the client and family in solving the problem.
- Shows outcomes and benefits of prevention in order to enable client to take responsibility for his/her own health.
- Is receptive to new ideas and innovative solutions and modifies own thinking and behaviour accordingly.
- Knows disease process in individuals; understands the determinants of disease and the appropriate primary care interventions.
- Develops/revises protocols for preventive and primary care based on latest scientific information about disease prevention and health maintenance.
- Provides disease prevention and clinical care services in a manner consistent with the mission, priorities, and resources of the health agency.
- Uses every patient encounter as prevention opportunity (i.e. checking immunization status of children accompanying adults to clinic).

Skills for Health (UK)

Surveillance and assessment of the population's health and well-being.

- Manage, analyse, interpret and communicate information, knowledge and statistics about needs and outcomes of health and wellbeing
- formulate and agree with relevant others:
    - the concepts to be used
    - clear questions to be answered
    - issues to be addressed
    - the criteria against which progress should be measured
    - how the confidentiality of information can be maintained
- identify with others a range of valid, reliable, cost-effective and ethical methods for answering the questions
- identify appropriate and valid sources of information about the population's health and wellbeing needs and outcomes
- define search strategies for reviewing data, information or knowledge about needs and outcomes and summarising the results
- identify gaps in data, information and knowledge and effective ways of addressing these gaps
- collect accurate quantitative and qualitative field data when secondary data is unavailable
- manage, analyse and interpret data, information and knowledge using methods appropriate to:
    - the initial questions
    - the nature of the data, information and knowledge
- appraise and synthesise data, information and knowledge appropriately and create new information that identifies:
    - consistency and inconsistency in outcomes
    - any limitations in data, information or knowledge and the analyses used
- continually hold issues raised about data, information and knowledge open to question so that those sections of the population who are at risk can
- be identified
- describe problems accurately, communicate them to relevant others and make appropriate recommendations on the actions they should take
- monitor data, information and knowledge at appropriate intervals and take the necessary actions as a result of this surveillance.

Promoting and protecting the population's health and wellbeing

- negotiate and agree with relevant others:
    - the target population and its context, culture, interests and needs
    - the purpose of the strategy
    - relevant targets and performance indicators
    - the different interventions within the strategy and effective ways of delivering them
    - the evidence base for the work
    - the skills and skill mix needed to effectively deliver the strategy

    - recording and information systems and requirements
    - the effective allocation of human, financial and capital resources
- provide clear and focused briefings on:
    - individuals' roles and their relationship to others
    - the expectations for the strategy as a whole and their contribution to targets and performance indicators
- lead others in implementation offering ongoing support and feedback opportunities to those involved
- continuously monitor activities against targets, performance indicators, plans and budget and make any necessary adjustments
- anticipate factors that may reduce the quality and effectiveness of the strategy and take effective action to address them
- evaluate the strategy as it proceeds using appropriate methods, make any necessary adjustments and effectively communicate the results
- identify strategies which are not effectively promoting health and wellbeing and bring them to the attention of the people concerned challenging them when this is appropriate.
- describe perceived problems accurately, communicate them to all stakeholders and make appropriate recommendations on the actions to be taken
- formulate and agree with stakeholders clear aims and objectives to be addressed together with appropriate and acceptable outcomes and the criteria against which progress can be measured
- identify a range of valid, reliable and cost-effective strategies, methods and approaches to address these objectives, taking account of the local situation and national/local strategies and priorities
- review and critically appraise the evidence for different strategies, methods and activities appropriate to:
    - the initial aims and objectives
    - the nature of the outcome sought
- provide sufficient and timely support to those responsible for implementing the disease prevention and screening programmes so that they are able to follow the recommendations made
- evaluate information emerging from the implementation and disseminate this clearly to the appropriate individuals, groups and organisations.
- monitor and assess the degree of risk to the health and wellbeing of populations
- identify emerging patterns and develop effective processes for managing them
- monitor the effectiveness of different approaches to protecting the health and wellbeing of individuals and populations and minimising risks
- refer people to the correct individuals or organisations when this is necessary providing accurate and necessary information consistent with maintaining confidentiality
- arrange for any necessary investigations to be undertaken promptly
- make effective contributions to the management of incidents, outbreaks and emergencies
- clearly explain to relevant others how to minimise risks to the population's health and wellbeing.

Developing quality and risk management within an evaluative culture

- maintain a current overview of:
    - risks to the population's health and wellbeing

    - evidence of effectively managing these risks
- determine with stakeholders the perceived and actual risks to the population's health and wellbeing
- realistically assess the scale, severity and frequency of the risk
- make justifiable proposals based on research evidence as to those risks which are acceptable and those which need to be managed
- determine with stakeholders whether current risk management strategies are sufficient to protect the public from risks to their health and wellbeing
- develop and apply effective ways of educating the public about actual and perceived risks responding swiftly to public concern when there are scares and alarms
- evaluate risk-management options for:
    - evidence
    - potential for improving health and wellbeing outcomes
    - the impact they will have on health and wellbeing
    - comparative costs and benefits
    - and select those which are cost effective in relation to the population
- formulate and agree with stakeholders targets, plans, outcomes and strategies for risk management
- identify and take opportunities to inform and advise people on risks and associated risk management strategies consistent with legislative and organisational requirements.
- discuss and debate with others the effectiveness of health and healthcare interventions, programmes and services taking account of what they are saying
- draft
    - the questions which are to be answered
    - the issues to be addressed
    - the criteria against which progress should be measured
    - the confidentiality of information
    - and reach agreement with others on the way forward
- identify appropriate and valid sources of evidence to address the questions and issues
- critically appraise with others the evidence and interpret the extent to which it can be applied in the situation concerned
- seek to reach agreement with others about the strength and nature of direction needed in the context (ie whether standards, protocols or guidelines should be produced)
- produce clear and succinct information to direct or guide future actions and review and update the information in discussion with others
- communicate the results of this process to relevant individuals and organisations and make appropriate recommendations on the actions they should take in a way that facilitates effective implementation whilst recognising issues that are still open to debate
- accurately identify obstacles to change and effective ways to overcome them
- negotiate and agree with those affected by the change:
- how the change will take place
- their roles and responsibilities
- support and encourage people throughout the change process.
- develop audit/evaluation plans that:
    - identify the nature of the audit or evaluation
    - identify standards and guidelines that are relevant to the work
    - contain the necessary information for effective implementation
    - are consistent with statutory and organisational requirements

    - identify the financial, human, capital, material and time resources required
- identify and develop appropriate and cost effective quantitative and qualitative assessment tools and techniques
- analyse the data using valid, reliable and cost-effective methods, compare it with established standards, highlight the differences and draw conclusions when there is sufficient evidence to do so
- propose realistic, sustainable and cost-effective methods of improvement, consistent with the findings of the audit or evaluation and effectively disseminate them to the relevant people
- offer appropriate support and encouragement to all those who need to be involved in improving interventions, programmes and services
- re-evaluate to confirm quality improvements on a regular basis.

Collaborative working for health and wellbeing

- identify clearly:
    - the benefits which collaborative working will bring to the health and wellbeing of the population and how it will help reduce inequalities
    - the focus and purpose of collaborative working
    - issues which might arise in collaborative working (such as confidentiality)
    - its consistency with own organisation's strategy and direction
- promote opportunities to develop relationships aimed at improving health and wellbeing and reducing inequalities with other organisations and practitioners
- inform colleagues in one's own organisation about contacts made and the progress of collaborative working for health and wellbeing and reducing inequalities
- interact effectively with people and present information to them in a timely and effective manner, encouraging them to articulate their priorities for, and preferred methods of, collaborative working
- propose realistic and sustainable methods of working collaboratively emphasising the advantages to the different organisations
- develop and agree ways of working and plans for doing so with other agencies and put in place effective processes to confirm others' formal agreement to them
- propose ways in which collaborative working could be improved based on the evidence of evaluations, known trends and developments and the stage of development of the collaborative working.
- identify in discussion with the people involved:
    - the purpose and context of the advice
    - its relationship to health and wellbeing, related needs and demands, and the reduction of inequalities
    - their current level of understanding about health and wellbeing, related services and initiatives
    - their commitment to making a difference to health and wellbeing and outcomes
- interact effectively with people in ways which are consistent with the practitioner's role and relevant legislation and guidelines and which maintain the necessary level of confidentiality
- follow reasoning processes which are:
    - capable of justification given the information available
    - are based on evidence about improving health and wellbeing and reducing inequalities

    - are likely to result in optimum outcomes for the health and wellbeing of populations and individuals
    - are ethical
- offer advice on those areas in which the practitioner is competent and refer people to others for areas beyond own competence
- maintain accurate and complete documentation of the advice given.
- produce clear, succinct written information in a variety of forms to meet the needs of different audiences
- present oral information clearly and succinctly to meet the needs of different audiences using appropriate audio-visual equipment and other methods effectively in support
- find out information relevant to their own work and organisation, record it accurately and pass it on to others who need it
- prepare for meetings to a sufficient level to enable effective participation
- present themselves and interact with others in a manner which promotes the work of the organisation and is consistent with the promotion of rights and responsibilities
- make timely and appropriate interventions and challenge others when they misinterpret information or are discriminating unfairly
- make constructive comments on the contributions and views of others
- respond positively and constructively to requests for information within agreed timescales and consistent with agreed organisational policy and guidelines, statutory requirements and with the management of risk
- enable others to develop their knowledge, understanding, skills and confidence in improving health and wellbeing through the use of methods appropriate to their interests and needs
- maintain the security of confidential information

Developing health programmes and services and reducing inequalities

- accurately identify inequalities in health and wellbeing and potential approaches to reducing these inequalities
- identify and take opportunities to alert stakeholders to inequalities in health and wellbeing
- identify and take opportunities to work across boundaries to reduce inequalities in health and wellbeing
- identify and critically appraise:
    - evidence of effectiveness of different services and programmes
    - emerging trends and developments
    - significant opportunities and constraints and their inter-relationships
    - resource availability
- identify and agree with stakeholders priorities for reducing inequalities in health and wellbeing
- identify and agree with stakeholders how best to allocate human, financial and capital resources, given evidence of effectiveness and identified priorities for reducing inequalities in health and wellbeing
- effectively overcome barriers to change in people and organisations
- communicate priorities and actions to reduce inequalities in health and wellbeing to stakeholders in an appropriate and timely way.
- negotiate and agree with relevant others:
    - the target population and its context, culture, interests and needs

    - the purpose of the programme, service or intervention
    - relevant targets and performance indicators
    - the different interventions within the programme, service or intervention and effective ways of delivering them
    - the evidence base for the work
    - the likely impact on health and wellbeing
    - the skills and skill mix needed to effectively deliver the programmes, services and interventions
    - recording and information systems and requirements
    - the effective allocation of human, financial and capital resources
- provide clear and focused briefings on:
    - individuals' roles and their relationship to others
    - the expectations for the programme, service or intervention as a whole and their contribution to targets and performance indicators
- lead others in implementation offering ongoing support and feedback opportunities to others involved
- continuously monitor activities against targets, performance indicators, plans and budget and make any necessary adjustments
- anticipate factors that may reduce the quality and effectiveness of the programme, service or intervention and take effective action to address them
- evaluate the programme, service or intervention using appropriate methods, make any necessary adjustments and effectively communicate the results
- identify programmes, services and interventions that are not addressing health and wellbeing needs and bring them to the attention of the people concerned challenging them when this is appropriate

Policy and strategy development and implementation to improve health and wellbeing

- identify the long term aims and priorities of policies and their enactment in legislation
- monitor and prioritise opportunities to influence policies for improving health and wellbeing and reducing inequalities
- explain clearly to policy makers orally and in writing:
    - the advantages that improving health and wellbeing and reducing inequalities will bring to their agendas and objectives
    - evidence of effective practice in policy development
    - improvements, successes and achievements made by policy makers
    - constructively tackle queries and objections to improving health and wellbeing and reducing inequalities in policies
- provide evidence-based advice and information on specific areas of policy:
    - at the times policy makers can best make use of it
    - in a form that enables them to use it readily
- maintain contact and goodwill with policy makers and encourage them to seek advice when it would benefit the population to do so
- evaluate own effectiveness in influencing the policy agenda and use this to inform future practice
- advocate for new policies that will effectively improve health and wellbeing and reduce inequalities.

- work jointly with others to:
    - identify and agree outcomes, outputs and targets for the strategies
    - identify and agree inputs and processes (including costs and best value)
    - formulate strategies that are appropriate to the policy, the context and the people involved
- develop implementation methods and plans which take account of:
    - evidence of past practice
    - priorities, objectives and context
    - the roles, responsibilities and level of commitment of different people
    - the resources available
    - others' interests, values and contexts
- discuss and agree with relevant people plans for implementing the strategy, including how it will be monitored
- support people throughout implementation encouraging them to offer suggestions, ideas and views and take an active part in the process
- take the appropriate actions when there are deviations from plans.
- make a preliminary assessment of the policy and identify whether it is likely to pose any significant questions for, or is clearly beneficial to, health and wellbeing
- outline clearly the possible hazards and benefits of the policy and accurately identify the questions to be addressed in the assessment process
- clearly characterise:
    - the nature and magnitude of the harmful and beneficial factors
    - how many people will be affected by the factors
    - the nature of their effect
- develop a risk management plan which details:
    - how the effects of harmful factors can be minimised or negated
    - how the effect of beneficial factors can be maximised
- present conclusions and recommendations to policy makers at a time and in a way they are likely to understand and be able to use and that:
    - acknowledges the complexity of inter-relationships between the different factors and the difficulty of identifying simple causal relationships
    - highlights the benefits to be gained and the risks of inaction
- re-evaluate the impact of policies on improving health and wellbeing after the policy is implemented to confirm or deny the accuracy of the initial assessment
- provide appropriate encouragement and support to others to assess the impact of policies on improving health and wellbeing.

Working with and for communities to improve health and wellbeing

- identify the different communities within the area, who else has consulted them and the outcomes of these consultations and involvement
- select and deploy appropriate, evidence-based methods of involving communities which are likely to be effective in achieving improvements in health and wellbeing
- communicate effectively with communities using methods appropriate to the communities concerned
- work collaboratively with others when this will achieve improvements in health and wellbeing and is the most effective way to use resources

- promote the improvement of health and wellbeing at every opportunity and the contribution of the practitioner's organisation in achieving health and wellbeing
- agree with those involved how community involvement will be evaluated
- work with others to evaluate community involvement using the agreed methods and effectively disseminate the outcomes.
- discuss with communities theirs' and the practitioner's values and priorities in relation to health and wellbeing in an open and constructive way
- act in ways which respect diversity and promote rights and responsibilities
- support communities in prioritising their issues into an agenda for action
- offer choices for improving health and wellbeing that are appropriate to the community's issues, context and situation
- offer appropriate support to change, development and capacity building in the community
- enable service providers to adapt and modify their approaches to achieve improvement in the health and wellbeing of communities
- effectively disseminate outcomes in improving health and wellbeing to appropriate others maintaining the appropriate level of confidentiality
- identify issues on which, and situations where, advocacy may be effective
- facilitate communities in identifying their own interests and concerns and confirm that these have been understood accurately
- discuss with those concerned:
    - their interest in health and wellbeing
    - threats to health and wellbeing that are amenable to change
    - conflicts of interest, areas of tension and differences of opinion
    - the potential wider impact of the advocacy
- actively encourage and support communities to speak and act on their own behalf when it is possible for them to do so
- effectively monitor and support the actions of communities
- make appropriate interventions on behalf of communities when situations arise which may directly affect their interests and concerns
- take opportunities to speak out for communities on aspects which will improve their health and wellbeing in different arenas and with a range of stakeholders
- evaluate approaches made by communities for being in the best interests of health and wellbeing and the reduction of inequalities in the population as a whole and consistent with known evidence
- explain clearly and concisely the reasons for not acting in certain situations and the need to maintain the confidentiality of certain information
- liaise regularly with communities to confirm that the advocacy is effective and consistent with their wishes
- evaluate with communities the outcomes that the advocacy has achieved.

Strategic leadership for health and wellbeing

- 1identify clearly how improving health and wellbeing can contribute to others' agendas, targets and priorities
- identify clear goals and processes for improving health and wellbeing and communicate these effectively to others

- identify and take opportunities to link improving health and wellbeing and reducing inequalities to the role and functions of others using language which is appropriate to their context and culture
- inspire others with one's own values and vision of health and wellbeing and lead them in taking forward these values and vision
- take opportunities to incorporate messages that support the vision and values into daily activities
- present decision makers with clear, accurate, succinct and timely information justifying the need to focus on improving health and wellbeing
- enable people to communicate their views on improving health and wellbeing, listen to what they are saying and respond appropriately to their views
- use all appropriate and available methods and strategies which are appropriate to the audience and context for improving health and wellbeing
- identify the reasons for proposals being rejected and offer suitable alternative options
- overcome individual and organisational barriers to improving health and wellbeing including those within the senior management team
- challenge those whose views and actions are not consistent with the vision of improving health and wellbeing
- maintain and sustain the vision and objectives of improving health and wellbeing until it is firmly embedded into culture and values
- work with others to identify and agree the roles and responsibilities of the different people and organisations involved in improving health and wellbeing
- Support and encourage people to:
    - understand their contribution
    - offer suggestions, ideas and views
    - take an active part in the process
    - lead others in improving health and wellbeing
    - informally network with others
    - share achievements jointly with other colleagues
    - challenge tradition, take risks and express dissatisfaction
- share information with those involved in a way which achieves the best possible balance between:
    - enabling people to gain a better understanding of the practitioner and their organisation
    - supporting joint working
    - maintaining any necessary confidentiality
- accept joint responsibility for any arising problems and tensions using these to improve future practice
- record any learning from the work for the benefit of improving health and wellbeing
- communicate progress to those involved in a manner which emphasises and recognises the achievements made, notes any constraints and encourages people to remain committed
- recognise achievements in a way that is appropriate to those concerned, the nature of the achievement and the overall context.
- effectively monitor advances in knowledge and practice in own area of work and remain fully up-to-date with developments
- offer clear, concise information on developments in knowledge and practice to others using methods which are effective for the individuals and the context
- evaluate with others relative strengths and effectiveness in different settings

- identify potential areas of conflict between individual, team and organisational interests and values and take the appropriate steps to manage them
- develop plans to improve own and others' behaviour, practice and competence consistent with:
    - different learning styles
    - evidence-based practice
- make recommendations for future resourcing that:
    - take account of relevant past experience and future trends and developments
    - are consistent with objectives and policies
    - clearly indicate potential benefits
- identify problems with resources promptly and recommend corrective action to the relevant people as soon as possible
- make recommendations for improving the use of resources in an appropriate and timely manner to the relevant people
- present recommendations for improving capacity and capability in an appropriate and timely

Research and development to improve health and wellbeing

- appraise the validity, sufficiency and relevance of research methodologies for the contexts and questions
- evaluate the outcomes of research to determine:
    - the extent and limitations of current knowledge and practice
    - their scope, validity and reliability
    - the extent to which the coverage, focus, processes and findings are influenced by the agendas of those commissioning and funding it or others
    - whether the conclusions and recommendations are justifiable
    - their impact on and potential for improving health and wellbeing
    - their implications for collaborative working arrangements
- determine priorities for research and development that are consistent with:
    - current understandings
    - the extent and potency of uncertainties
    - the priorities of communities
    - collaborative working arrangements
- identify stakeholders who need to be involved in the development and evaluation of research and develop with them clear research proposals that are consistent with identified priorities
- present clear, succinct, valid, reliable and well-costed research proposals to appropriate organisations in ways which are likely to capture their interests, alerts them to ethical and confidentiality issues and encourages their support for the required resources
- alert others to gaps in knowledge which need to be tackled
- effectively manage research projects consistent with their agreed aims, objectives, methods, desired outcomes and ethical dimensions
- collate, analyse and synthesise qualitative and quantitative research data and information using appropriate methods
- effectively disseminate the results of research to appropriate others maintaining agreed levels of confidentiality.
- identify, select and summarise in a suitable format relevant and current qualitative and quantitative information about knowledge and practice and disseminate it appropriately

- provide information to individuals and groups in relevant contexts and present it at a pace, and in a style and form, which is appropriate to their needs
- provide opportunities for recipients to ask questions, seek clarification and give feedback
- reach agreements with stakeholders about implementing research in practice which strike the best balance between
    - improving health and wellbeing
    - the issues and concerns of those with an interest in implementation
    - available resources
    - national priorities and strategies
- propose and agree courses of action
    - focused on the purpose and intended outcomes of implementation
    - limit any obstacles
    - detail who is to do what and by when
- communicate action plans in a style and form appropriate to those who are to implement them following agreement from those concerned
- provide the appropriate level and type of support for implementation
- monitor and review implementation against anticipated outcomes and make any necessary adjustments with the agreement of stakeholders.

Ethically managing self, people and resources to improve health and wellbeing

- give relevant people the opportunity to provide information on the direction that work should take, how it should be developed and the resources needed
- present recommendations:
    - that take account of relevant past experience and current trends and developments
    - that are consistent with team objectives and organisational policies
    - that clearly indicate potential benefits
    - that are consistent with quality standards and service agreements
    - in an appropriate and timely manner to the relevant people
- reach agreement with relevant people on the prioritisation of objectives and the allocation of people and resources
- develop, update and agree with relevant people objectives and work plans that:
    - are consistent with team and organisational objectives
    - are realistic and achievable within organisational constraints
    - allocate work effectively to team members enabling outcomes to be achieved and facilitating learning
    - allocate resources effectively
    - clearly define team' and individual' roles and responsibilities
- explain objectives and work plans in sufficient detail and confirm team and individual understanding of, and commitment to them at appropriate intervals
- provide advice and guidance on how to achieve objectives in sufficient detail for, and at times appropriate to, the needs of teams and individuals.
- effectively monitor performance and resource use and take the appropriate actions when there are issues
- give teams and individuals opportunities to monitor and assess their own performance against objectives and work plans
- provide constructive feedback on team and individual performance against objectives, acknowledging achievements, respecting confidentiality and addressing poor performance

- monitor interactions between individuals and groups taking speedy action to challenge discrimination, behaviour targeted at individuals and behaviour which undermines the effectiveness of team working
- regularly review progress and reschedule activities to help achieve planned objectives
- make sure that self and work teams:
    - record information accurately and consistently with the promotion of rights and of equality and diversity
    - record information so that it distinguishes between facts and opinions and contains only the information necessary for the record's purpose
    - handle and store information securely consistent with organisational and legislative requirements
    - only disclose information to those who have the right and need to know and when proof of identity has been obtained and alert individuals to information that needs to be shared with others
    - act in ways that are consistent with people's expressed beliefs and views and acknowledge the benefits of diversity
- monitor continuously the quality and deployment of resources and ensure consistency in product and service delivery
- make recommendations for improvement in an appropriate and timely manner to the relevant people

take decisions as soon as sufficient information is available obtaining further information promptly when this is necessary.

Health Development Agency Skills Audit (UK)

A - Personal Skills

- Communication
- Working in multidisciplinary teams
- Facilitation
- Negotiation
- Conflict management
- Interpersonal skills/relating to others
- Managing self
- Innovations and creativity
- Presentation skills
- IT skills

B - Leadership

- Clarifying direction and purpose
- Building a shared vision
- Building commitment
- Empowering others
- Creating a learning culture
- Influencing others
- Political sensitivity and awareness

C - Policy and Strategy

- Understanding national policy context
- Understanding local policy context
- Understanding other organisations
- Policy development
- Influencing policy and strategy

D - Management

- Prioritising
- Planning
- Initiating programmes of work
- Fund raising
- Contributing to other programmes
- Co-ordination of work
- Sharing skills in your organisation
- Sharing skills with other organisations
- Working with communities
- Consultation
- Enabling others
- Encouraging community participation

E - Workplace Management

- Managing change
- Managing quality
- Project management
- Financial management
- Managing contracts
- Staff appraisal
- Staff development
- Recruitment and selection
- Managing performance
- Motivating and building teams
- Delegation
- Health and safety

F - Underpinning Principles

- Understanding own contribution to health and wellbeing
- Understanding influences on behaviour
- Understanding inequality issues
- Understanding cultural diversity
- Understanding relevant legislation
- Advocacy for individuals
- Advocacy for community issues

G - Professional Technical

- Epidemiology
- Health needs assessment
- Health impact assessment
- Risk analysis
- Undertake research
- Critical appraisal of research
- Commission research
- Evidence-based decision making
- Statistical analysis
- Evaluation methodology
- Knowledge management
- Preparation of reports
- Building partnerships
- Partnership working

Appendix 3 – Public Health Informatics Competencies

The Northwest Center for Public Health Practice has developed a set of competencies for public health informatics that is broken down into three groups or classes:

- Effective use of information;
- Effective use of information technology;
- Effective management of information technology projects.

The competencies for each of these classes are reproduced below. Further information is available from http://healthlinks.washington.edu/nwcphp/phi/comps/competencies.html.

Class 1 – Effective Use of Information

Twenty-three of the 24 competencies in this class are taken directly from the core competency set of the Council on Linkages.

Domain/ Topical Area	COMPETENCY
Analytic Assessment Skills	1. Determines appropriate uses and limitations of both quantitative and qualitative data 2. Evaluates the integrity and comparability of data and identifies gaps in data sources 3. Applies ethical principles to the collection, maintenance, use, and dissemination of data and information 4. Partners with communities to attach meaning to collected quantitative and qualitative data 5. Makes relevant inferences from quantitative and qualitative data 6. Obtains and interprets information regarding risks and benefits to the community 7. Applies data collection processes, information technology applications, and computer systems storage/retrieval strategies 8. Recognizes how the data illuminates ethical, political, scientific, economic, and overall public health issues

Policy Dev't/ Program Planning	9. Collects, summarizes, and interprets information relevant to an issue 10. Utilizes current techniques in decision analysis and health planning
Communication Skills	11. Communicates effectively both in writing and orally, or in other ways 12. Uses the media, advanced technologies, and community networks to communicate information 13. Effectively presents accurate demographic, statistical, programmatic, and scientific information for professional and lay audiences
Community Dimensions of Practice	14. Develops, implements, and evaluates a community public health assessment
Basic Public Health Sciences	15. Defines, assesses, and understands the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services 16. Identifies and applies basic research methods used in public health 17. Applies the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries 18. Identifies and retrieves current relevant scientific evidence 19. Identifies the limitations of research and the importance of observations and interrelationships
Financial Planning and Management	20. Manages information systems for collection, retrieval, and use of data for decision-making 21. Conducts cost-effectiveness, cost-benefit, and cost utility analyses
Leadership and Systems Thinking	22. Identifies internal and external issues that may impact delivery of essential public health services (i.e. strategic planning) 23. Promotes team and organizational learning 24. Manages the information of the public health organization as a key strategic resource and mission tool

Class 2 – Effective Use of Information Technology

Domain/ Topical Area	COMPETENCY
Digital literacy	1. Utilizes personal computers and other office information technologies for working with documents and other computerized files
Electronic Communications	2. Utilizes modern information technology tools for the full range of electronic communication appropriate to one's duties and programmatic area.
Selection and use of I.T. tools	3. Appropriately selects and utilizes state-of-the-art software tools in support of public health data acquisition, entry, management, analysis, planning, and reporting.
On-line information utilization	4. Utilizes modern information technology tools to identify, locate, access, assess, and appropriately interpret and use on-line public health-related information and data.
Data and System Protection	5. Utilizes information technology so as to ensure the integrity and protection of electronic files and computer systems 6. Applies all relevant procedures (policies) and technical means (security) to ensure that confidential information is appropriately protected.
Distance Learning	7. Utilizes modern distance-learning technologies to support life-long learning appropriate to programmatic needs
Strategic use of I.T. to promote health	8. Utilizes modern information science and technology as a strategic tool to promote public health (e.g., through community education, behavior modification, collaborative policy development, issue advocacy and community mobilization).
Information and knowledge development	9. Combines data and information from multiple sources, to create new information to support public health decision-making

Class 3 – Effective Management of Information Technology Projects

Domain/ Topical Area	COMPETENCY
System development	1. Composes and manages systems development teams in a manner that demonstrates a recognition of the appropriate roles and domains for computer scientists, epidemiologists, policy makers and programmers and other IT specialists in information systems development 2. Leads and advocates for, or otherwise actively participates in, the development of integrated, cost-effective public health information systems within the public health enterprise, ensuring that new applications and information systems are built in conformance with a larger (enterprise-level) information architecture. 3. Recognizes, participates in, and applies accepted models and processes for developing information systems and for managing information resources
Cross-disciplinary communication	4. Actively, effectively engages and communicates with information technology specialists as well as public health colleagues regarding proven information technologies and their potential application to public health practice.
Databases	5. Participates in the development of new and enhanced databases for public health, and applies principles of good database design
Standards	6. Utilizes (or ensures the utilization of) data standards for storage and transmission, and is able to find the relevant standards specifications as needed.
Confidentiality and Security Systems	7. Applies and participates in developing confidentiality and privacy policies for the enterprise, and ensures the development of adequate security systems to support the implementation of those policies.
Project management	8. Utilizes proven informatics principles and practices when managing information technology projects
Human resources management	9. Utilizes proven informatics principles and practices when managing information technology staff and other IT specialists.
Procurement	10. Procures appropriate cost-effective, information technologies for the public health enterprise
Accountability	11. Uses information technology to assure openness of public health agency processes and responsiveness to the electorate and the public
Research	12. Monitors informatics research findings and public health information systems development efforts, and applies these findings and experiences as appropriate to public health practice.

Appendix 4 - Descriptions of Core Functions

The following table provides the descriptions of the ACPH core functions that appeared in the ACPH capacity report[1] and the IPPH-CIHR report on the future of public health in Canada.[2]

Function	ACPH Capacity Report	IPPH-CIHR Future of Public Health Report
Population Health Assessment	Population health information is used to develop profiles of a population's health, identify problems or groups in need of interventions, identify threats to the public health, and evaluate health policy in terms of the effects on the public's health of the investments made.	Population health assessment results in a profile of the health of the population. It attempts to answer the following basic questions: How healthy is the population? Is its health getting better or worse? Are some areas or subgroups much healthier than others? What is the impact of ill health on society? What are the population's health needs? What risks does it face? What explains the differences in health? Assessments of this nature might be used to support development or review of health policy, a health goals process, a needs assessment for health programs, or resource allocation.[15]
Health Surveillance	Health surveillance is the tracking and forecasting of any health event or health determinant through the collection of data, and its integration, analysis and interpretation into surveillance products, and the dissemination of those surveillance products to those who need to know.[21]	Surveillance is the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation, and evaluation of health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link of the surveillance chain is in the application of these data to prevention and control. A surveillance system includes a functional capacity for data collection, analysis and dissemination linked to public health programs.[22]
Disease and Injury Prevention	Prevention consists of an intervention that has been shown to reduce significantly the likelihood that a disease, injury or disorder will affect an individual or that interrupts or slows the progression of that disease.[23]	Disease prevention covers measures not only to prevent the occurrence of disease, such as risk factor reduction, but also to arrest its progress and reduce its consequences once established.[24]
Health Promotion	Health promotion is the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and realize their aspirations, to satisfy needs, and to change or cope with the environment.[14]	
Health Protection	Health protection refers to actions that protect Canadians against health and safety risks. Science (providing evidence), surveillance (monitoring and forecasting health trends), risk management (assessing and responding to health risks) and program development (taking action) form the basis of health protection activities.[25]	

Appendix 5 - Elements of Core Functions

Table 3: High-Level Overview of Core Elements of Core Functions

Assessment	Surveillance	Promotion	Prevention	Protection	Common Elements
• Developing a population health profile o Existing data sources; o Data collection (e.g. survey, consultation) o Data analysis and interpretation; o Identifying inequalities in health o Assessing economic burden of ill health; • Assessing health needs o Effectiveness of interventions; o Existing services • Dissemination and communication (reporting on trends)	• Data collection; o Legal o Ethics • Data analysis; o Descriptive epi • Interpretation; • Dissemination; • Information management;	• Strategies o Build healthy public policy; o Create supportive environments; o Strengthen community action; o Develop personal skills; o Reorient health services • Processes o Advocacy; o Partnership o Inter-sectoral collaboration o Working with communities and individuals; o Communi-cation	• Early detection (screening); • Clinical preventive services (e.g. immunizations, behaviour counselling; STI treatment and counselling): o Intermediaries o Direct delivery; • Communication • Risk factor approaches	• Legislative basis (Act(s), regulations) • Inspection • Enforcement • Risk Assessment (hazard identification, and assessment, exposure assessment, risk characterization) • Communication • Outbreak investigation and responses • Emergency preparedness and responses	• Policy development; • Leadership and management; • Program development, implementation and evaluation; • Fundamental skills • Personal characteristics of practice

Appendix 6 – Lists of Core Competency Domains

Council on Linkages Between Academia and Public Health Practice (US)	Public Health Competency Handbook (US)	Skills for Health/ Faculty of Public Health (UK)	NHS Health Development Agency (UK)	New South Wales Public Health Officer Training Program (Australia)	Workforce Development Group of ANAPHI (Australia)
• Analytic/ assessment skills • Policy development/ program planning skills • Communication skills • Cultural competency skills; • Community dimensions of practice skills • Basic public health sciences skills • Financial planning and management skills • Leadership and systems thinking skills	• Visionary leadership • Communication • Information management • Assessment, planning and evaluation • Partnership and collaboration • Systems thinking; • Promoting health and preventing disease	• Surveillance and assessment of the population's health and well-being • Promoting and protecting the population's health and well-being • Developing quality and risk management within an evaluative culture • Collaborative working for health and well-being • Developing health programmes and services and reducing inequalities • Policy and strategy development and implementation • Working with and for communities • Strategic leadership for health and well-being • Research and development • Ethically managing self, people and resources	• Personal Skills • Leadership • Policy and Strategy • Management • Workplace Management • Underpinning Principles • Professional Technical	• Professional practice • Management • Epidemiology and biostatistics • Information management • Communication • Health policy • Health promotion • Health care evaluation • Infectious diseases • Risk assessment/ management • Health economics	• Public health in context • Quantitative and qualitative methods for public health • Foundation and theoretical knowledge and skills • Applied public health skills • Generic skills

Appendix 7 – Examples of How Public Health Programs Integrate Features Across Functions

The following table is an attempt to illustrate that public health program areas often include dimensions of each of the core public health functions. Boundaries between functions are not solid and it is certainly possible to categorize specific activities under more than one function.

Program	Population Health Assessment	Health Surveillance	Disease and Injury Prevention	Health Promotion	Health Protection
Tobacco control	• Analysis of health surveillance data, other data sources (e.g. community consultation), and existing evidence to identify opportunities for action;	• Tobacco use rates; • Disease specific rates	• Client counselling; • Training of health professionals;	• Social marketing; • Advocacy for bylaws	• Enforcement;
Bicycle-related injuries	• Analysis of behaviour and injury data, consultation with target groups, availability of preventive interventions, and existing evidence of effective interventions, to identify opportunities for action;	• Rates of bicycle helmet use; • Rates of bicycle related injuries;	• Training of health professionals for brief interventions	• Collaboration with recreation and other partners; • Advocacy for bike lanes/paths	• Enforcement of helmet legislation
Sexually transmitted infections	• Analysis of behaviour and disease data, consultation with target groups, availability of services, and existing evidence of effective interventions, to identify opportunities for action;	• Rates of risky behaviour; • Rates of STI	• Testing, treatment of cases and their contacts;	• Social marketing; • Ensuring opportunities for skills development (schools) • Advocating for removal of barriers to services	• Investigation of cases; • Assuring treatment and follow-up

Program	Population Health Assessment	Health Surveillance	Disease and Injury Prevention	Health Promotion	Health Protection
Healthy child development	• Analysis of surveillance and other data sources, consultation with target groups and community partners, availability of services, and existing evidence of effective interventions, to identify opportunities for action;	• Rates of birth outcomes; • Trends in achieving developmental milestones	• Assessment clinics; • Case management; • Screening for higher risk families; • Training workshops; • Home visits	• Advocacy for healthy public policies (minimum family income, healthy neighbourhoods)	• Inspection and enforcement of public health and day care regulations, building codes, etc

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