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### Allied Health Evaluation Review: Practice and Education Infrastructure

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#### **ABSTRACT**

The Allied Health Evaluation Review: Practice and Education Infrastructure was a detailed review of the practice progress of twenty-seven allied health professions. The key objectives of the evaluation review were to determine each profession's practice status, measured on a common set of parameters that could be compared to one another at a given point in time, and to identify what variables, if any, were correlated with the practice progress of a given profession. Practice benchmarks were established and tools were developed to measure the practice progress of each profession relative to the others at a given point in time. The tools included a practice leader survey, focus group questions, an education infrastructure questionnaire, a job description scoring tool, and an overall scoring guide. At the end of the review, each profession was evaluated on the same scoring criteria and placed on a six-point ordinal scale. Acceptable practice progress was set at or above four out of six. Only thirty-three percent of the professions had scores above the established threshold. Scatter plots were developed to determine which practice variables, if any, were positively correlated with the practice progress of the profession. Many variables were not significantly correlated with a profession's composite score, including size of the profession, number of areas of practice, use of support personnel, regulatory status, and physician oversight. Two variables were positively correlated with practice progress: clinical linkages and practice leadership and practice education infrastructure; both correlations were statistically significant. Due to the importance of these two variables, it is recommended that future development and investment should be targeted at establishing and strengthening clinical linkages (e.g., profession-specific practice councils) and practice leadership across a profession, as well as practice education infrastructure. Future research could validate the tools that were developed and determine if investment in the professions, as outlined, improves their overall practice performance.

#### **INTRODUCTION & PURPOSE**

Fraser Health is the largest health region in British Columbia. It serves approximately one third of the province's population, both urban and rural, across a large geographic area. Within the organization, there are three broad categories of health care providers: medical, nursing, and allied health. Allied health has been defined as "professions which are involved in health care, other than the disciplines of medicine, nursing and health administration, for which tertiary qualifications exist and which are essential for professional registration or admission to a relevant professional body and whose professional activities focus on client diagnosis, treatment and/or primary health care."<sup>1</sup> Fraser Health employs allied health professionals from twenty-seven professions. These professionals comprise approximately half of the clinical workforce within Fraser Health and practice across the continuum of care, including hospitals, public health, home health, residential care, and mental health and substance use. The number of care providers employed in each profession varies greatly; there were five in perfusion, while laboratory medicine has over one thousand.

From 2007 to 2009, following extensive consultations with regulatory bodies, professional associations, and educational institutions, Fraser Health developed unique profiles for the twenty-seven allied health professions, including the number

employed in the health region, areas of practice, regulatory status in British Columbia, current qualifications and educational requirements, established scope of practice, advanced practices, practice leaders in the profession, clinical links between practice leaders, and links between members of the profession. During this process, it became evident that the professions differed significantly in the current status of their professional practice development. Fraser Health sponsored this evaluation review project to determine what factors were contributing to these differences in professional practice standards.

In British Columbia, there is no consistent classification system to cover all professions providing allied health services. In Australia, the proposed classification system divides the allied health professions into therapy, diagnostic, technical, scientific, and complementary services.<sup>2</sup> In this review project, we used the broadest definition of allied health (presented above) and included all direct care professions (e.g., physiotherapy), indirect care professions (e.g., biomedical engineering), and clinical support professions (e.g., health records). We included regulated professions (e.g., occupational therapy), professions which require certification in order to practice (e.g., laboratory), and unregulated professions (e.g., respiratory therapy). We excluded only those professions not directly employed by Fraser Health (e.g., chiropractic). At the outset of our evaluation review, we decided to include clinical support personnel (such as technicians and assistants related to a profession) within the definition of a profession. For example, within pharmacy we included pharmacists, pharmacy technicians, and pharmacy assistants.

Fraser Health was reorganized in 2010 into a program management operational model, which resulted in significant changes to traditional functional departments and practice leadership roles. Health care providers who are organized by program instead of profession may suffer a loss of professional identity during the reorganization process.<sup>3</sup> As well, there may be concern that professional issues such as development of practice standards, quality assurance and improvement, and the provision of profession-specific education, such as the oversight of student programs and continuing education opportunities, may be undermined if there is no profession-specific focus.<sup>3</sup> In the new world of program management reporting, it is not readily apparent how professionals and support personnel are linked to each other across the system. The linkages could be formal, such as practice leadership oversight, or more informal, such as profession-specific practice councils. Practice councils have been cited as a core support for individual and group growth in numerous health care settings.<sup>4</sup> They provide an infrastructure and use practical methods to enhance relationships, develop shared leadership, and improve outcomes for those receiving and providing health care.<sup>4</sup>

The environment in which health care professionals practice is a key contributor to clinical performance. As increasing attention is paid to shortages of many health care professionals, the establishment of a quality professional practice environment is critical in order to optimize retention and recruitment and support the provision of quality care.<sup>5,6</sup> Canadian researchers have identified sixteen essential elements of a professional practice environment, which include the need for well-established linkages within the organization and profession-specific practice councils.<sup>7</sup> Also cited was the need to recognize the impact that the setting has on professional practice.<sup>7</sup> All health care environments, regardless of role, function, size, or location, should be places where people want to work and develop, where the workforce is valued and supported in an environment of mutual collaboration.<sup>8</sup>

The key objectives of the evaluation review were twofold: (1) determine each profession's practice status, measured on a common set of benchmarks that could be compared to other professions at a given point in time; and (2) determine what variables, if any, were correlated with the practice progress of a given profession. There were no applicable evaluations published in Canada that could be replicated or adapted for our review. We therefore extracted key elements and measures to guide this study from the literature, relevant professional organizations, and internal data sources. We developed broadly applicable tools and a scoring system that could be subjected to statistical analysis to enable a cross-profession comparison at the end of the review. We hypothesized that there may be one or more variables that influence the practice performance of a given profession. If significant relationships between practice variables and the practice performance of a profession were found, this information could be used to address the practice needs of the various professions.

## **METHODOLOGY**

This evaluation review was designed using principles of action research methodology. We divided the evaluation of practice progress into two streams: (1) a review of objective information (e.g., job descriptions and organizational charts) and (2) anecdotal information (e.g., in-person surveys with practice leaders and/or sole practitioners from each profession). We used the literature review and professional profiles to set the stage for what was being considered in the practice infrastructure and to aid in the development of practice benchmarks that could apply universally to any profession. The focus was on practice leaders as sources of anecdotal information. If a profession did not have formal practice leadership positions, we then interviewed sole practitioners, who practice alone and who may have quasi-leadership responsibilities.

The first step was to set the benchmarks by which comparisons could be made regarding the practice progress of each profession. Clinical practice benchmarking activity is increasingly being recognized as a valuable practice for the development of quality improvement initiatives within a group.<sup>9</sup> Rather than direct comparison with actual best practice, clinical practice benchmarking ensures all levels of evidence are used in identifying standards of excellence and supports structured comparison and sharing. In this evaluation review, our focus was on establishing key benchmarks essential to optimal practice and determining what factors make a difference in the provision of safe, integrated care across the various professions.<sup>10</sup> As shown in Table 1, we compiled thirty-two practice benchmarks; sixteen pertain primarily to the care providers and sixteen are client focused.

Our review of organizational charts focused on whether there were practice leadership positions in a given profession and, if so, what their identified roles were. It was also important to determine whether the practice leadership positions were joined to each other formally or informally. From the organizational charts, we also determined how many positions were unlinked to practice leaders in a given profession and whether the practice leaders were connected to each other in any way. In total, we reviewed over three hundred organizational charts and the practice leadership positions identified for the job description reviews. From this information, we calculated the percentage of unlinked health care providers and drew a practice linkage chart for each profession. The clinical linkage charts were verified with leaders from each profession. The development of a regional, profession-specific practice council was also noted as fully developed, partially developed, or non-existent. We scored the overall clinical linkages in a profession as follows:

- Full clinical linkages: over 80% of staff were connected by practice leadership and there was a functional, profession-specific practice council.
- Partial clinical linkages: over 50% of staff were connected by practice leadership and there was a practice council either fully or partially developed. In any instance where a practice council existed but fewer than 50% of staff were connected, we assigned the profession this designation.
- Limited clinical linkages: fewer than 50% of staff were connected by practice leadership and there was no profession-specific practice council.

The information from the organizational charts and the development of the practice linkage charts enabled us to search for all job descriptions with practice leadership and/or education leadership components in positions within each profession. We developed a comprehensive job description review tool that assigned points for accuracy, currency (within five, ten, or more years), job responsibilities that corresponded to the thirty-two benchmarks, credentialing, educational requirements, and inclusion of education-related responsibilities. In total, we reviewed and assessed over three thousand job descriptions across the twenty-seven professions. In professions where there were multiple levels of practice leadership (e.g., practice leader, educator, supervisor, section head, etc.), we collated the overall job description results for that profession. For example, the practice leader's job description may not include student programs, but the educator's might. Any errors and omissions in the job descriptions were noted. We gave each profession an overall job description score from A to F, with A being excellent and F being unacceptable.

**Table 1: Benchmarks for Measuring Professional Practice**

Provider-focused practice parameters	Client-focused practice parameters
1. Education requirements adhered to; evidence in the profession of a foundation for equitable continuing education and professional development	17. Consistent clinical standards of care and treatment across the system
2. Opportunities for advanced skill development and credentialing	18. Parameters are appropriate and up to date; guidelines and decision-support tools (e.g., protocols, clinical practice guidelines) are consistent
3. Current regulatory requirements for entry to practice	19. Input into program and service changes that affect practice
4. Student programs and supervision of "qualified but not registered" (QNR) staff	20. Appropriate scope of care based on established scopes of practice
5. Support personnel linked to and accountable to the professionals directing practice	21. Evidence-based tools and outcome measures, including indicators to evaluate effectiveness
6. Titles, roles, and leadership positions reflect accountability and responsibility in that profession	22. Consistency of practice from site to site and across sectors
7. Clinical linkages and lines of accountability; regional links to like professionals; no unlinked practitioners	23. Practice and technology are current
8. Adherence to established scope of practice	24. Practicing to full scope
9. Performance expectations, evaluation, supervision, and mentoring	25. Quality focus with methods for ongoing improvement
10. Hiring, selection, and interviewing involvement	26. Risk and safety management; minimized risk of harm regarding scope, reserved actions, etc.
12. Job descriptions are current and reflective of all of the above; adherence to collective agreements, regulatory requirements, and roles	28. Research- or evidence-informed practice; best practice
13. Linkages with regulatory colleges or universities	29. Involvement in program or service changes, additions, and planning
14. Consistent with the vision of Professional Practice & Integration and regional strategic plan	30. Meet accreditation standards and required organizational practices
15. Professional goals and objectives exist	31. Access to appropriate service is available and consistent
16. Advancement of a profession including profile, advocacy, and forum for professional input	32. Have tools and information to enhance practice

Using the same benchmarks we used for the job description review, we compiled a generic survey to ask the practice leaders and sole practitioners from each profession if in fact they were doing the work identified in each benchmark. We also developed a practice education infrastructure tool that could be easily administered and scored. The surveys and education infrastructure tool were administered in person, by profession, in focus groups. The evaluator for the in-person survey and education infrastructure tool was a different researcher than the job description reviewer. This was done in order to minimize bias, because the job description reviewer would have already known what strengths and weaknesses that profession had in its job

descriptions. To conclude the focus group sessions, participants were asked about the status of their profession-specific practice council; whether it was fully functional, partially developed, or not developed; and what they thought the top three priorities were for advancing practice in their profession.

The focus groups ranged in size from three to twenty participants depending on the size of the profession and the number of overall practice leaders. In no case was the participation less than 50% of the total practice leaders or unlinked professionals from that profession. In two professions (perfusion and child life), there was only one practice leader, and the survey was conducted in a 1:1 interview format. The survey sessions were 1.5 to 2 hours in length, and over three hundred participants from across the twenty-seven professions were asked the same questions that were used in the job description review. For example, benchmark #9 considers the issue of performance evaluation. The survey question was, "In your role, are you responsible for conducting clinical performance reviews of assigned staff?" Participants were also asked if they were able to do this work always, sometimes, or never. If the answer was "never," then the follow-up question was, "Why are you unable to fulfill that part of your role?" Participants wrote anecdotal information as to the reasons for compliance or non-compliance.

The practice education infrastructure tool consisted of ten key components compiled from the roles outlined in the various job descriptions (see Table 2). To each statement, participants could answer with yes, partially, or no; these responses were scored as one point, half a point, and zero points, respectively. The results of the education infrastructure tool were scored as follows:

- Full education infrastructure: there was an overall regional practice education plan, educational leadership in one or more designated positions, a coordinated approach to student practice, and a plan for continuing education and professional development (>7.5 out of 10).
- Partial education infrastructure: there may be rudimentary planning, limited clinical education infrastructure, and a limited focus on student practice (4.0–7.4 out of 10).
- No education infrastructure: the profession had no dedicated educational positions (or part of a position), no comprehensive clinical education plan, and no consistent student practice program (<4.0 out of 10).

**Table 2: Practice Education Infrastructure Tool**

Key components
1. There is an overall plan for continuing education and professional development.
2. Consistent funding and funding criteria exist for professional development and continuing education.
3. There is a plan for the profession for advanced education, skill development, and technical upgrading, preferably regional.
4. There is evidence of core competencies and knowledge/skills for entry level practitioners in different settings.
5. There is evidence of core competencies and knowledge/skills for advanced practice areas and a mechanism for upgrading or training.
6. Progress is evident towards competency-based evaluations.
7. There is an education position (or part of a position) that is responsible for education planning, teaching, and student practice for the profession.
8. Programs are in place for new staff, including comprehensive orientation and support such as mentoring.
9. There is a plan for student practice, consistent acceptance guidelines, and a method for mapping student capacity in all sites and sectors.
10. There is a plan or program in existence or under development for internships, residency programs, refresher support and/or support for international graduates.

The final, overall scoring criteria included all measures related to the thirty-two benchmarks: job description grade, survey outcomes and scores, presence and adequacy of practice leadership time, clinical linkage charts, and education infrastructure scores. The twenty-seven profession-specific final scores were placed on a six-point ordinal scale divided into three ranges: low practice needs (score of 4.0–6.0), mid practice needs (score of 2.0–3.9), and high practice needs (score of 0.0–1.9). The range, mean, and standard deviation of scores were also calculated. The threshold for acceptable practice progress was set at a score of 4.0 (or higher) out of 6.0. This was based on the standard “passing” threshold of 66% (2/3), which is frequently used for educational examinations and tests. A sample of the scoring guide for the three ranges is shown in Table 3.

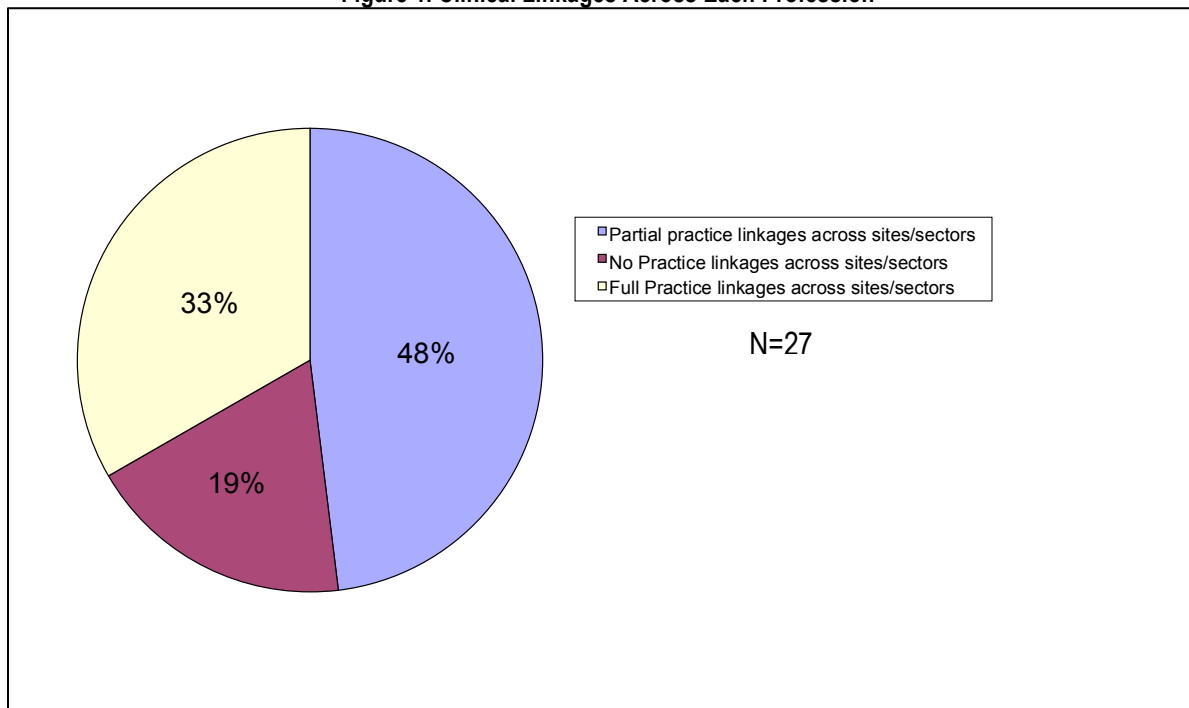
**Table 3: Sample Scoring Guidelines for the Consolidated Professional Practice Progress and Needs Continuum**

Needs range	Example score	Progress description	Scoring criteria
Low Needs 4.0–6.0	5.5–6.0	High Practice Progress	A+ on job description review; full clinical linkages across the profession; all support personnel are linked to professionals; minimum of 28/32 parameters have activity or are being addressed; surveys showed adequate leadership time, consistent involvement in practice parameters; full educational infrastructure and progress (>8/10); evidence of quality measures, risk management/safety; consistent standards of practice site to site and across sectors; practicing to full scope/advancement noted; technology, tools, and materials are current for practice.
Mid Needs 2.0–4.0	3.5–4.0	Variable Practice Progress	C on job description review; most titles and roles clear; up to half of practitioners are not linked; majority of clinical support personnel are linked to professionals; beginning foundation for education is apparent (<6/10); minimum of 21/32 parameters being addressed; partial evidence of quality measures; practice is usually consistent but not always across sectors; most areas have current technology, tools, and materials.
High Needs 0.0–2.0	<0.5–1.0	Limited Practice Progress	F on job description review; mostly unlinked practitioners, including support personnel; no more than 6/32 parameters being addressed consistently; no significant practice activity; no significant practice oversight or participation; no regional coordination or standardization; little or no focus or attention on education (<2/10); may have up to 25% of items in 1.0–1.5 or 1.5–2.0 category; not practicing to full scope; not necessarily current for practice.

## RESULTS

One project evaluator assigned the job description scores and the percentage of clinical linkages, while the other evaluator compiled the survey scores and the practice education infrastructure score. Scoring was completed in increments of 0.5. Once each profession had been plotted on the six-point scale, we analyzed the data in a variety of ways: determining critical linkages across the professions, developing a continuum based on the overall combined scores for each of the professions, and plotting variables on scatter plots to establish which were correlated to the overall practice progress of a given profession.

The clinical linkage charts drawn for each profession indicated high variability in connectedness. For example, pharmacy was found to have low practice needs: all pharmacy practice leaders and educators were linked to each other across the system, and there were no unlinked pharmacists or pharmacy technicians/assistants. In a profession with high practice needs, such as psychology or social work, many practitioners were unlinked to their colleagues or practice leaders in any meaningful way. The development of a profession-specific practice council was also variable. For example, pharmacy had a consistent way to connect front line staff on practice issues, while psychology had no means of doing so. Figure 1 shows the percentage of professions with full, partial, or limited to no clinical linkages across the Fraser Health region.

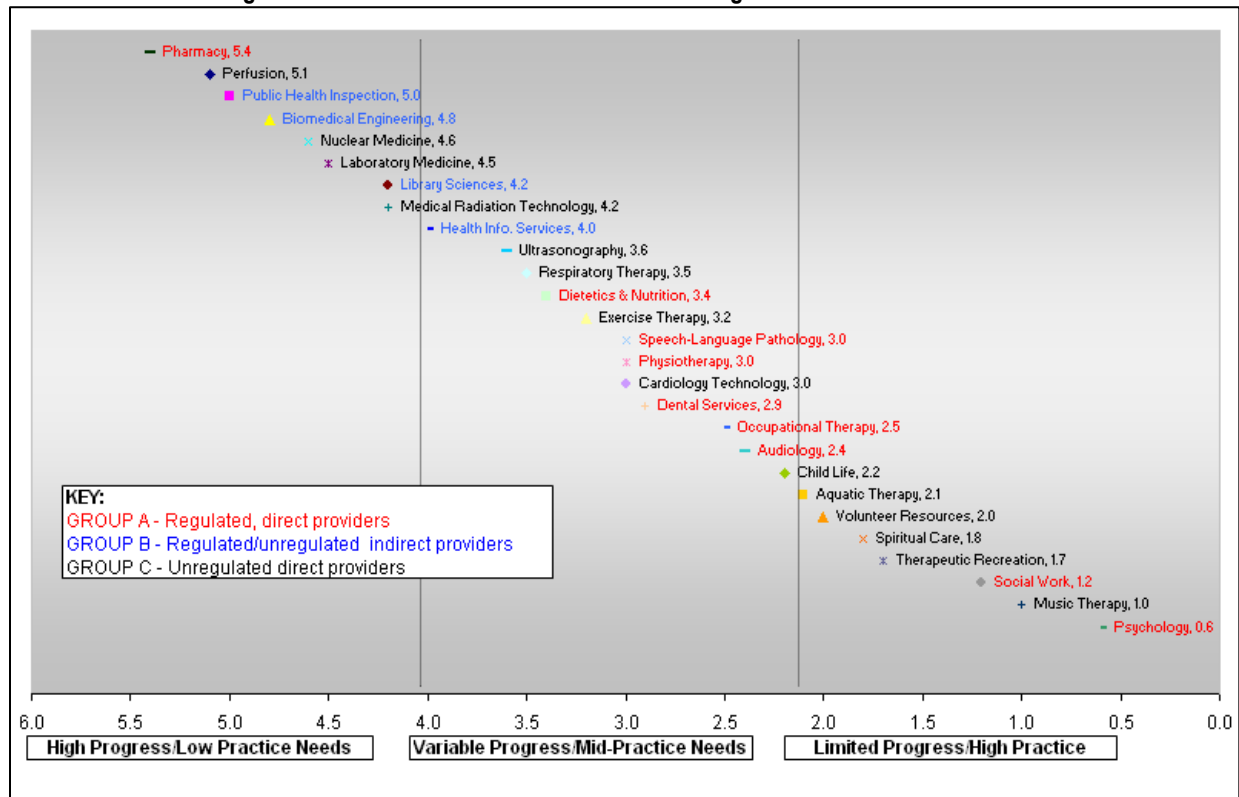
**Figure 1. Clinical Linkages Across Each Profession**

The job description review showed that there was high variability across professions in terms of the accuracy, currency, and roles for a profession; the scores ranged from an A in pharmacy to an F in psychology. A low score, such as in psychology, indicated that the majority of practice benchmarks were not included in any job description for the profession, were out of date, or were not reflective of the current practice environment. A high job description score, such as in pharmacy, indicated that the job descriptions addressed all of the targeted benchmarks and were current and accurate for the educational and qualification requirements.

The status of practice leadership positions was also highly variable from profession to profession. The professions with low practice needs (high practice progress), such as laboratory, pharmacy, and biomedical engineering, had leadership positions across the organization with a variety of roles that addressed the majority of the practice benchmarks. The lower-performing professions such as therapeutic recreation, social work, and psychology had fewer practice positions, addressed fewer practice benchmarks, and did not connect practice leaders across the system. The range of scores on the practice education infrastructure tool was from 0.6 (out of 10) in psychology to 8 out of 10 for pharmacy, indicating highly variable practice education infrastructures across the professions. The higher-scoring professions had evidence of education infrastructures such as continuing education programs and student practice programs and processes, whereas the lowest-scoring professions did not have those education elements.

At the conclusion of the scoring, we developed a continuum based on the overall combined scores for each of the professions. On the continuum, we colour coded the professions to make them easily identifiable: red for regulated, direct care professions; blue for unregulated or partially regulated indirect care professions; and black for unregulated direct care providers. The overall scores for each profession are shown on the consolidated professional practice progress and needs continuum (see Figure 2). The composite scores were placed on the six-point scale and ranged from a high of 5.4 for pharmacy to a low of 0.6 for psychology. There were no instances where the two evaluators' scores were in different practice needs ranges (i.e., low, mid, or high needs); hence, the combined score was representative of the profession's overall performance. The mean score was 3.1 (52%), which was below the established threshold of 4.0 (66%) for satisfactory practice progress. Thirty-three percent of the professions had scores above the established threshold. Of the twenty-seven professions, eight (30%) were in the low needs range, thirteen (48%) in the mid needs range, and six (22%) in the high needs range. The standard deviation was 1.32 and 100% of the professions fell within two standard deviations above or below the mean.

Figure 2. Consolidated Professional Practice Progress and Needs Continuum

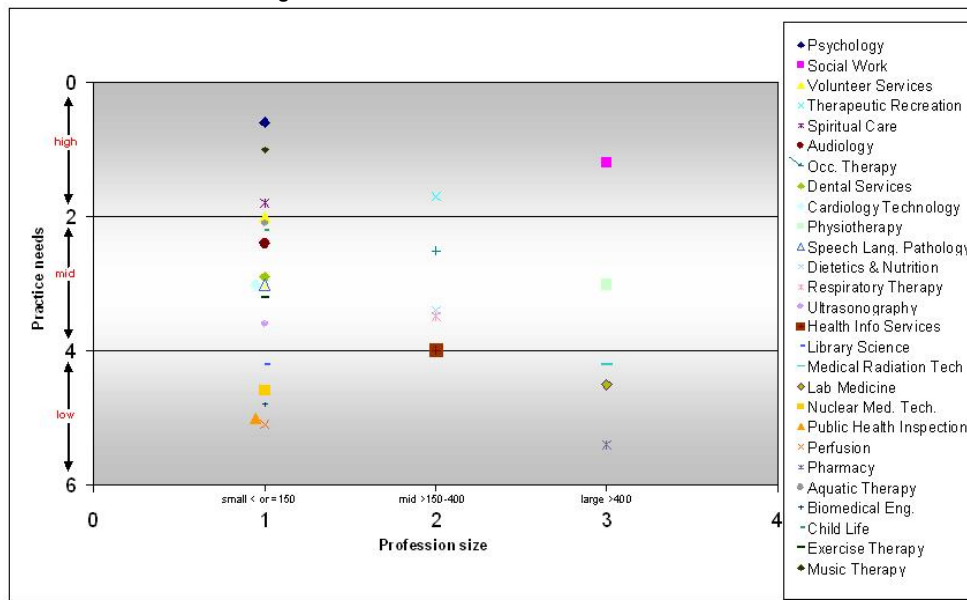


Once each profession had been plotted on the six-point scale, we tested all of the hypothesized variables that could potentially affect practice performance to see which were correlated to the overall practice progress of a given profession: size of the profession, use of support personnel, physician leadership, number of areas of practice (i.e., hospital services, home health, public health, residential care, mental health and substance use), entry level education of professionals, direct or indirect care status, current regulatory status of the profession, level of practice leadership, clinical linkages across the profession, and practice education infrastructure. Each of these variables was plotted on a scatter plot to determine if there was any relationship between the practice progress of the profession and that particular variable.

Most of the variables did not show any direct relationship to the consolidated practice score. For example, there was no demonstrated relationship between the size of a profession and the overall practice performance, as shown in Figure 3. Similarly, there was no correlation between the practice score and the presence or absence of physician leadership, complexity of the profession (i.e., number of practice settings), educational level of the professionals, use of support personnel, current regulatory status, and whether the profession provided direct or indirect care. For example, psychology had the highest-trained practitioners, at a doctoral level, yet it had the lowest practice progress. The laboratory has physician oversight and leadership, yet this profession did not score as high as professions without physician leadership. Pharmacy and psychology are both regulated professions, yet they were at opposite ends of the scoring continuum.



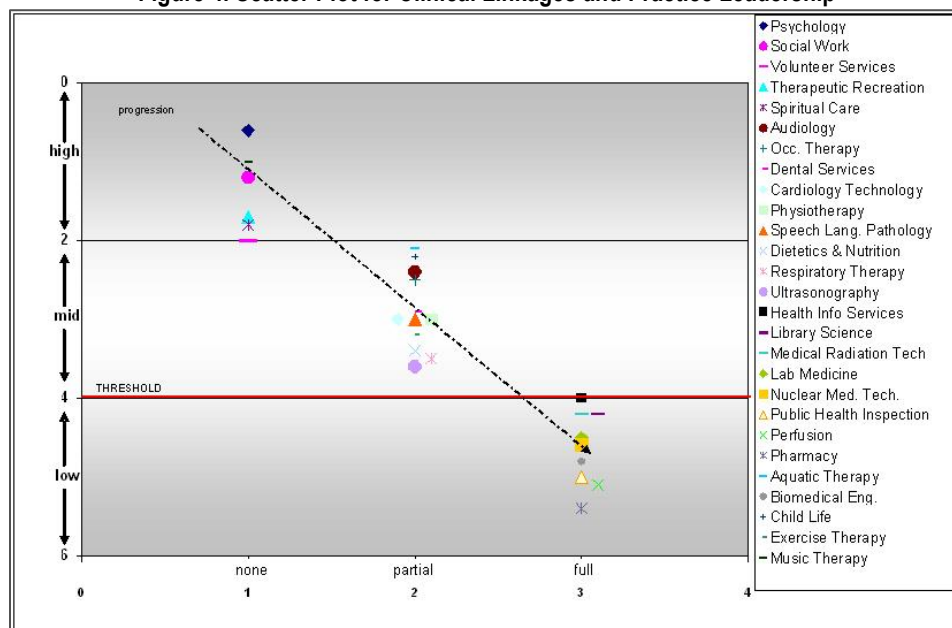
Figure 3. Scatter Plot for Size of the Profession



There were two variables placed on scatter plots that demonstrated statistically significant correlations to the overall practice scores. These were clinical linkages, and practice leadership and practice education infrastructure. For these variables, we calculated a Pearson product correlation coefficient as well as a *t*-test to verify the significance of the correlation.

The scatter plot showing the relationship between the profession's final composite score and the presence of comprehensive clinical linkages and practice leadership is shown in Figure 4. The correlation coefficient between the clinical linkages and practice leadership variable and the practice needs score was 0.93. The significance of this value was *t* = 0.48. This excellent correlation value indicated that higher levels of clinical practice leadership and linkages across the profession (such as profession-specific practice councils) corresponded to better practice performance. Without exception, the professions with the highest composite scores (in the low practice needs range) had full clinical linkages and practice leadership in place. Where the profession had partial linkages and practice leadership, its scores were in the mid needs range. The professions with few or no clinical linkages or leadership had composite scores in the high needs range.

Figure 4. Scatter Plot for Clinical Linkages and Practice Leadership

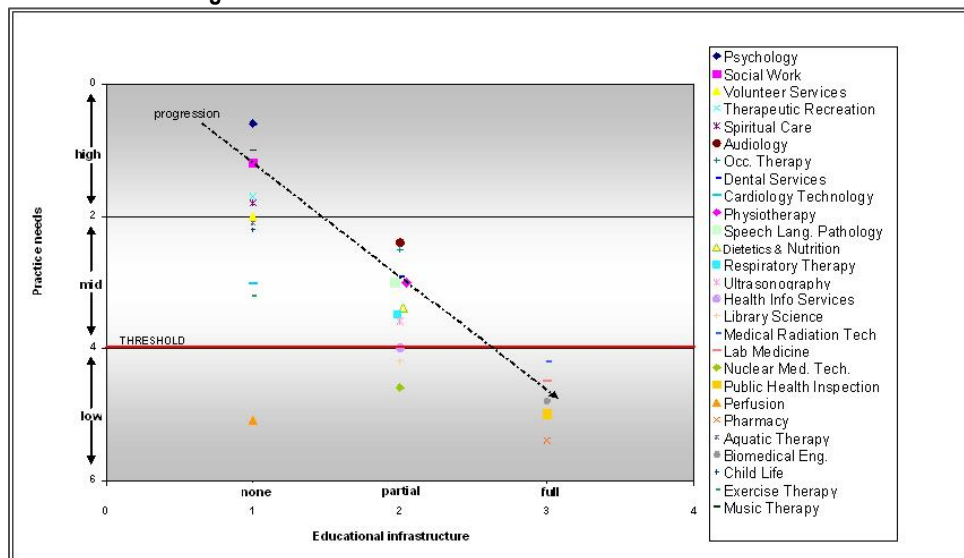


The anecdotal comments from practice leaders indicated that the presence of practice leader positions was not necessarily the only determinant of the overall practice needs. For example, respiratory therapy and social work both had local practice leadership but neither had regional practice leadership. Yet respiratory therapy was in the mid needs range, and its leaders reported an ability to fulfill their practice roles. Conversely, social work leaders reported inadequate time to fulfill their roles because of carrying significant clinical caseloads; the overall score placed this profession in the high needs range. The presence or absence of local practice leadership positions is significant but must be coupled with practice leaders' ability to perform leadership roles.

The professions with limited practice leadership and limited clinical linkages all scored in the high practice needs range. For example, in psychology there was no practice leadership, fewer than 25% of the practitioners were connected in any meaningful way, and there was no practice council. Similarly, therapeutic recreation, which was also in the high needs range, had limited practice leadership, few clinical linkages across the system, and only a partially developed practice council.

The scatter plot illustrating the relationship between a profession's final composite score and the practice education infrastructure score is shown in Figure 5. There was a strong relationship (correlation coefficient 0.73) between the overall practice score and the level of practice education infrastructure. Those professions with scores of 7.5 out of 10 or greater on the practice education tool had lower overall practice needs scores. Fewer than 33% of the professions had any reference in their job descriptions to educational positions that were either site- (or sector-) specific or regional. The profession of perfusion was an outlier in the practice education infrastructure scatter plot. This may be due to the fact that perfusion has fewer than six care providers who were co-located at one site, and that site did not accept student placements. If perfusion was removed from the scatter plot, then the correlation coefficient was 0.92 with a significance of  $t = 0.48$ .

**Figure 5. Scatter Plot for Practice Education Infrastructure**



## CONCLUSIONS

This allied health evaluation review was a detailed review of the practice progress of twenty-seven professions. The data provide significant insight into the variables that are correlated with profession's practice progress and status at a given point in time. The composite scores for each profession on the practice progress and needs continuum generated a baseline by which the effectiveness of future practice investments could be measured to ensure positive change occurs. The evaluation determined that clinical linkages and practice leadership, as well as practice education infrastructure, are important variables in the practice performance of a given profession. Other factors that were tested, such as size of the profession, were not correlated with the professions' practice performance.

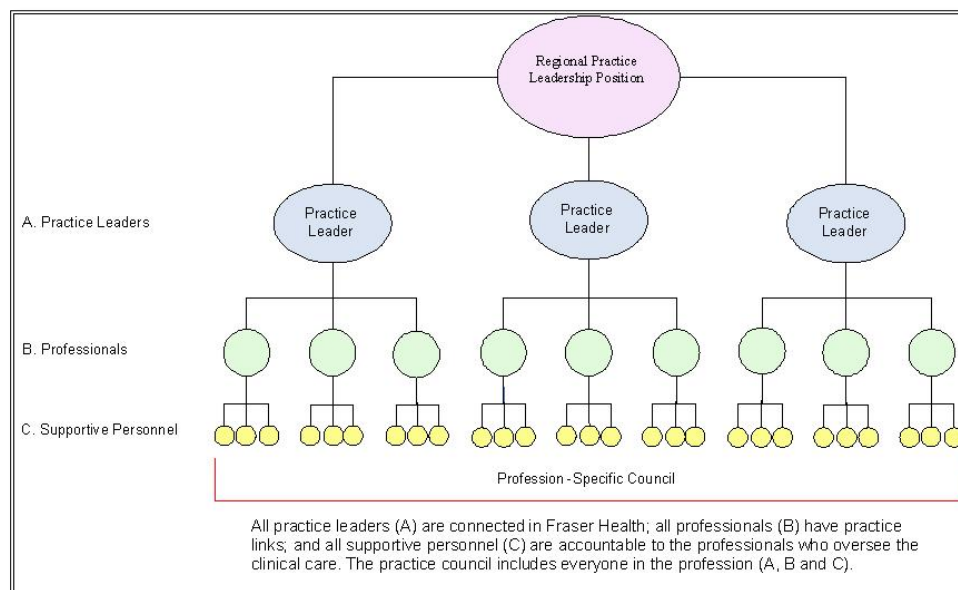
This review revealed inconsistencies and gaps in practice leadership and linkages across many of the professions. When a profession was not connected across the health region, the results showed deficits in numerous practice leadership functions, such as lack of professional involvement in the hiring of clinical staff, absence of clinical supervision for professionals and support personnel, missing or poorly articulated performance standards and evaluations, and inadequate practice advancement. Additionally, the comparison between high-scoring and low-scoring professions suggested that professions with lower scores

were not routinely participating in regional initiatives and integration activities, such as future planning, standardization across health sectors, and establishment of consistent evaluation tools. These regional foci were deficient in the lowest-scoring professions.

The highest-performing professions had local practice leadership as well as regional oversight for practice. Those professions with only local practice leadership varied in their performance depending on whether the local practice leaders had adequate time to fulfill their assigned roles and responsibilities. As reported in the practice leader surveys, when only localized practice leadership is present, the profession may have the ability to focus on the individual practitioner's practice but may not have the advantage of regional consistency and integration.

Overall, the presence of a system-wide practice infrastructure, including practice leadership positions and clinical linkages among all care providers across a profession, correlated highly with the practice progress of the profession. This finding underscored the need for a regional and standardized model for allied health practice leadership, which is illustrated in Figure 6. The model is based on the infrastructure in pharmacy, the profession with the highest practice progress. The professions above the established threshold for practice progress have professional staff, practice accountability to a practice leader, and support personnel accountable to the professionals overseeing the care.

**Figure 6: Schematic Practice Infrastructure**



The survey comments also indicated that the practice leaders saw a profession-specific practice council as a viable and integral way of connecting members of a profession to discuss practice issues, network, improve client outcomes, and advance or standardize the care provided. This is consistent with previous research, where well-established linkages within the organization were found to be essential for a professional practice environment.<sup>7</sup> The inclusion of profession-specific practice councils is also represented in the proposed practice infrastructure schematic (Figure 6).

The results also demonstrate a significant relationship between inadequate practice education infrastructure and practice progress. This finding supports the need for augmented and consistent support within allied health professions for new graduates, knowledge upgrading or refresher opportunities, integration into new areas of practice, specialty training, advanced skill development, continuing education, professional development, and student programs and processes. Generalized or inter-professional education is not a substitute for the important, ongoing, profession-specific development needed to maintain competency. This finding, promotion of staff competency, was another of the elements previously identified as essential to a professional practice environment.<sup>7</sup> The comprehensive infrastructure in Figure 6 may serve to address many of the concerns and deficiencies identified in the review, including the need for a comprehensive education infrastructure.

After the initial data collection and analysis in Fraser Health, the evaluation was replicated on a smaller scale in another British Columbia health region, with similar findings on the range of practice performance as well as the variables that correlated with

that performance.<sup>11</sup> This is significant in validating the evaluation review results and in establishing that the scores can be rechecked for any allied health profession in the future.

Improvement in practice progress requires engagement with all professionals and a shared accountability between operational leaders and professional practice leaders. It was apparent in this review that independent of the program management reporting model, the professions with strong linkages among all practitioners and strong regional practice leadership had the best practice performance. It was notable that those professions with low practice needs (high practice progress) also had the best scores in the area of practice education infrastructure. This supports the conclusion that with the elimination of profession-specific management positions, the need for profession-specific leadership can be met by creating a model of advanced practice leadership positions; for example, professional practice, clinical, education, and research leaders.<sup>12</sup>

A strong practice infrastructure is supported by the information in reviews of the characteristics of magnet hospitals.<sup>13</sup> This evaluation underscores the work of Scott et al. (1999), who cited the importance of effective leadership, clinical autonomy, and collaborative relationships to clinical care.

### **FUTURE RESEARCH AND DEVELOPMENT**

Several tools were developed during this evaluation review that could be validated for further use in order to measure baseline performance and change over time. For example, the practice education infrastructure tool is simple and easy to use and can measure the changes in a profession after investment in practice education infrastructure has been made.

This review determined that clinical linkages and practice leadership are strongly correlated with the practice progress of a profession. Further investigation could be done to determine if there is a change in a profession's practice performance when key investments are made in the profession. These could include enhancements to a profession's clinical linkages (e.g., the establishment of a strong, integrated, profession-specific practice council) and practice leadership infrastructure. It would be interesting to investigate whether there are any perceived differences to practitioners and the care they are able to provide when there is significant investment in their profession. The information from practice leaders and staff would be important to assess the impact of any changes. The impact could focus on the effectiveness of service delivery by each profession and its overall contribution to quality care for patients, clients, and residents.

Another interesting question for future research would be whether practice education infrastructure is a stand-alone variable or whether the scores in this area would improve if investments were made in the overall clinical linkages and practice leadership variables. It may be that attention would naturally be paid to the education components of practice if all practitioners are linked, focusing on their practice and connected by overall leadership within that profession. It would be important not only to establish the practice leadership positions and the clinical linkages, but also to ensure that the roles are clearly defined and attainable in order to benefit the practitioners—and the patients and clients they serve. The ultimate goal from this evaluation would be to move all professions into the low practice needs range (i.e., high practice progress) using the principles and parameters that are currently present in the highest-performing professions.

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### **REFERENCES**

1. Turnbull C, Grimmer-Somers K, Kumar S, May E, Law D, Ashworth E. Allied, scientific and complementary health professionals: A new model for Australian allied health. *Aust Health Rev.* 2009;33(1): 27-37. [PMID 19203331]
2. Lowe S, Adams R, O'Kane A. A framework for the categorization of the Australian health professional workforce. Discussion paper. Deacon, Australia: SARRAH: Services for Australian Rural and Remote Allied Health; 2007 July.
3. Baker GR. The implications of program management for professional and managerial roles. *Physiotherapy Canada.* 1993;45(4): 221-4. [PMID 10130904]
4. Wesorick B, Shiparski L, Troseth T, Wyngarden K. Partnership council field book. Grandville (MI): Grandville Printing Company; 1997.
5. Romanow RJ. Building on values: The future of health care in Canada. 2002 November [Cited 2009 Dec 23]. Available from: [http://www.cbc.ca/healthcare/final\\_report.pdf](http://www.cbc.ca/healthcare/final_report.pdf)

6. Health Canada. Health human resource strategy. 2006 [Cited 2010 Jan 3]. Available from: <http://www.hc-sc.gc.ca/hcs-sss/hhr-rhs/strateg/index-eng.php>
7. Mathews S, Lankshear S. Describing the essential elements of a professional practice structure. *Can J Nurs Leadership*. 2003;16(2):63-71. [PMID 12934701]
8. Australian Health Workforce Advisory Committee. The Australian allied health workforce: An overview of workforce planning issues. Sydney, Australia; 2006 Mar. AHWAC Report No.: 2006.1.
9. Ellis J. Sharing the evidence: Clinical practice benchmarking to continuously improve the quality of care. *J Adv Nurs*. 2000;32(1):215-25. [PMID 10886454]
10. Ellis J. Using benchmarking to improve practice. *Nurs Stand*. 1995;9(35):25-8. [PMID 7786744]
11. Vancouver Island Health Authority. Allied health review. Forthcoming 2009.
12. Chan A, Heck CS. Emergence of new professional leadership roles within a health professional group following organizational redesign. *Healthcare Management Forum*. 2002;15(4):47-54.
13. Scott JG, Sochalski J, Aiken L. Review of magnet hospital research: Findings and implications for professional nursing practice. *J Nurs Admin*. 1999;29(1):9-19. [PMID 9921144]