

**Grow Along with Me Project
Client Pathway Audit.**

**Exploring Child Developmental Checkups and Follow-up
Services**

Jan. 2008 – Sept. 2009



Prepared by:

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Client Pathway Audit.

Exploring Child Developmental Checkups and Follow-up Services

Executive Summary

Introduction

Coordination of services and activities among diverse and geographically dispersed partners is essential for seamless service delivery and optimal quality of care for children and families residing in the Alberta Health Services South Zone (formerly the Chinook Health Region). Exploring developmental check-ups and service “client pathways” is a significant first step in improving service delivery and outcomes for the child and family.

Research Question

The research question of interest was, “What were the system flow processes (client pathways) experienced by children 18-36 months of age who completed the Ages and Stages Questionnaire (ASQ) between Jan. 1, 2008 and Sept. 30, 2009 as part of the Grow Along with Me project?”

Methodology

Flow maps of the processes experienced by children and their families completing the ASQ were depicted. Key indicators were defined and integrated into the evaluation plan. Information was used to inform strategic planning and decision-making.

Results

This pathway audit identified the flow or movement of children through the system and it has provided the ability to improve efficiencies, and identify successes, misperceptions (e.g. gateway intervals), inconsistencies (e.g. in the flow process between and within provider groups) and gaps (e.g. in client subpopulations) (see page 3).

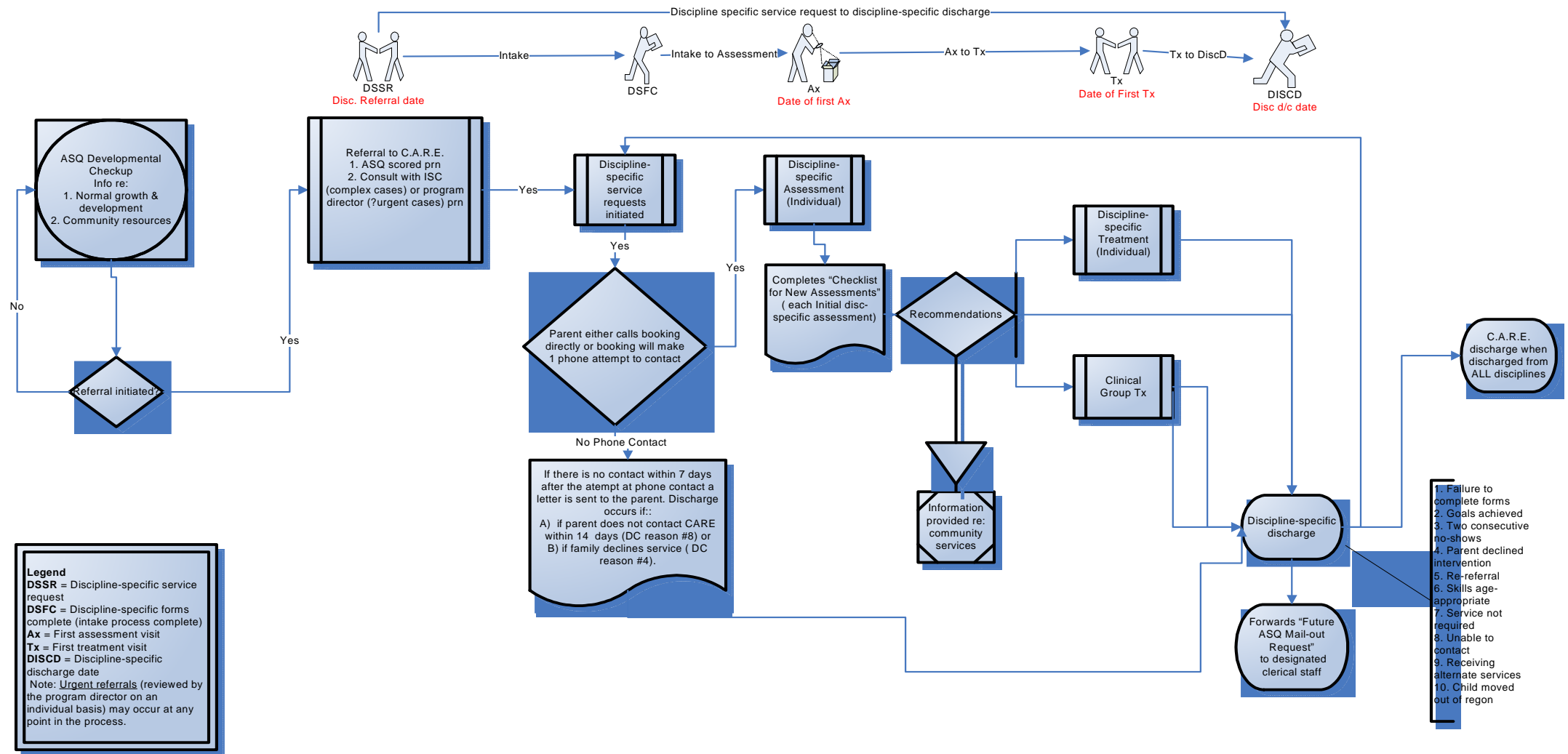
Recommendations

It is recommended that the Grow Along with Me Steering Committee:

1. Use this client pathway audit as the foundation upon which to develop a critical pathway (incorporating best practice, best-available evidence, and quality improvement principles) to:
 - a. Examine ways to eliminate unnecessary steps in the process and to minimize variation among service providers (where best practice evidence is available);
 - b. Develop a process to regularly review outlier cases;
 - c. Systematically review the quality of care along client pathways to analyze obstacles and deviations;
 - d. Use pathway baseline measures to set targets and timelines; and
 - e. Promote staff capacity to participate and design evaluative research in areas where data are lacking and where limited best practice knowledge is available.
2. Promote the availability of key indicators in a robust, responsive computer database:
 - a. Promote provincially harmonized data sets, definitions and indicators;

- b. Define indicators useful for strategic planning (for system sustainability post project). Promote computer linkage within and between service providers and partners (e.g. ASQ results, documentation of decisions). Consider integration of birth and developmental information within a linked dataset;
 - c. Explore opportunities to sustain the measurement of pathway indicators for comparison over time;
 - d. Promote adoption of ASQ version 3 to improve identified data collection issues (e.g. consistent use of age- specific ASQs); and
 - e. Refine collected data elements (e.g. prematurity, multidisciplinary gateway interval/wait times, treatment outcomes, referral patterns, and socio-economic health determinants).
3. Encourage consistent use of the ASQ (version 3) as an early identification tool. Reinforce the importance of parent comments in conjunction with ASQ domain flags when determining client and family follow-up.
4. Promote resource availability to support cost effective models of service delivery (e.g. the use of therapy assistants, parent-completed ASQs, community screening and screening blitzes);
5. Promote the value of the ASQ for parent educational and capacity building (prevention) in addition to its use as a flag for follow-up and treatment;
6. Continue to systematically incorporate evidence into strategic planning;
7. Consider segmenting the population of children into short term and long term subpopulations and planning service needs based on these population groups. For example, nearly $\frac{3}{4}$ of children were discharged from discipline-specific services prior to receiving treatment (range 59.7% - 85.7% [audiology (90.2%) excluded]). This may have implications for short-term service delivery options and/or group services. Consider the use of alternate service providers for treatment of long-term clients as an option for reducing service gateway interval/wait times and reducing duplication; and
8. Celebrate successes achieved to date.

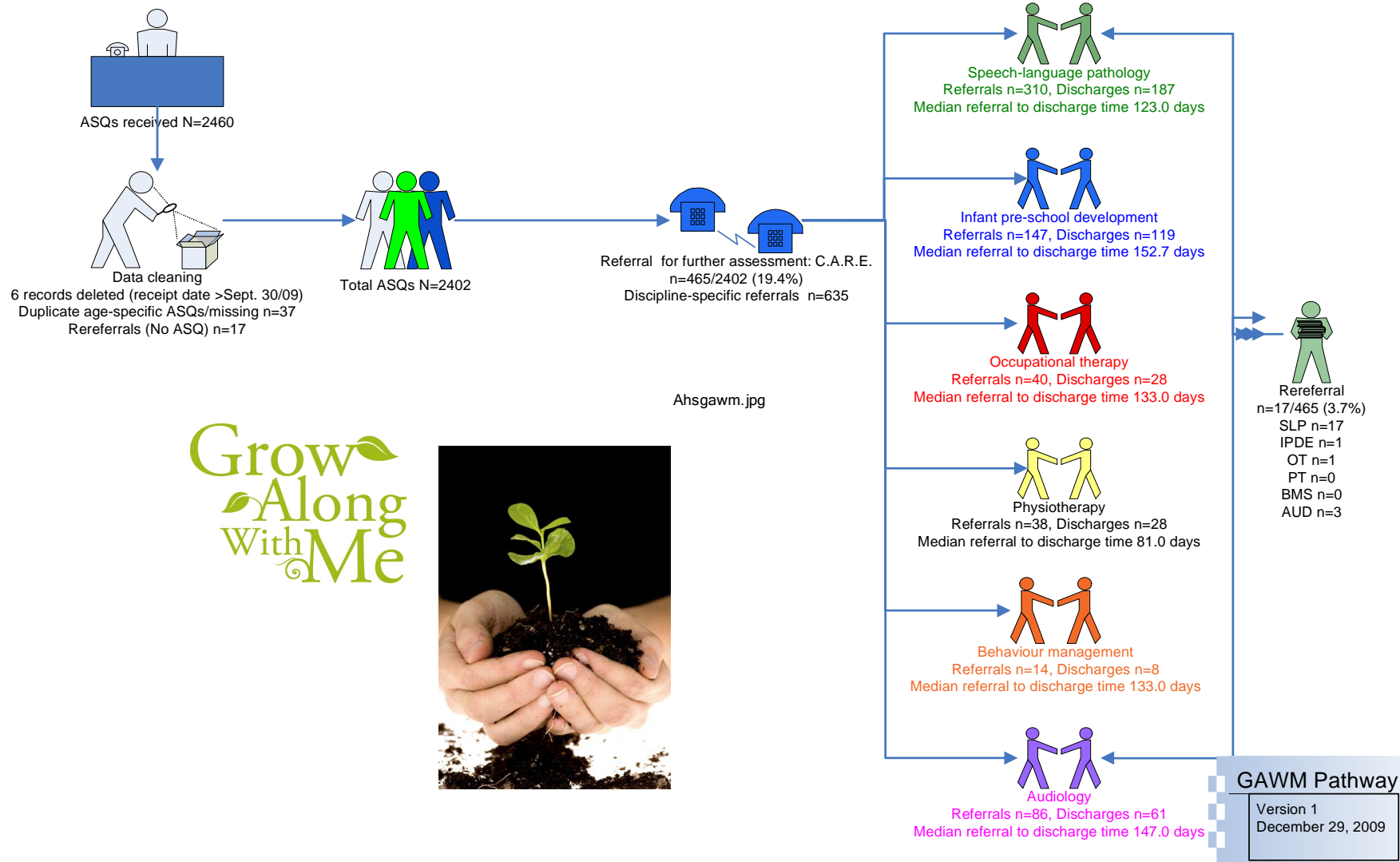
EARLY CHILDHOOD DEVELOPMENT CHECKUP AND REFERRAL PROCESS
LETHBRIDGE PRESCHOOL TEAM (REPRESENTATIVE OF SEPTEMBER 2009) V1
NOVEMBER 30, 2009



GAWM
12/28/2009
Evaluation Team

Grow Along with Me Client Pathway Audit

January 1, 2008 – Sept. 30, 2009



Grow Along with Me
Client Pathway Audit.

Exploring Child Developmental Checkups and Service Follow-up

Introduction

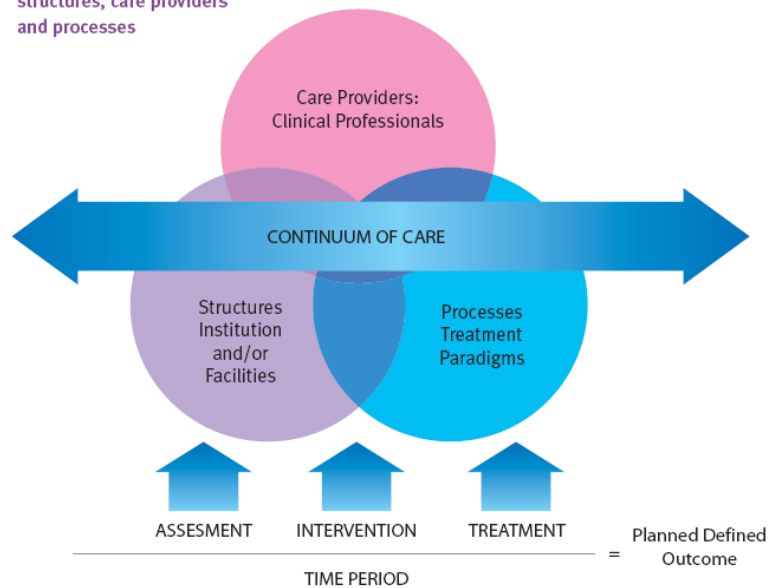
Coordination of services and activities among diverse and geographically dispersed partners is essential for seamless service delivery and optimal quality of care for children and families residing in southern Alberta. In following the journey of children who receive developmental screening in Alberta Health Services' South Zone (formerly the Chinook Health Region), the opportunity to systematically examine the movement of the child through a complex service delivery model is presented. According to system theory, it is important to examine the system as a whole, as each of the parts (and partners) is mutually dependent on each other. Exploring developmental check-ups (screening) and service "client pathways" is a critical first step in improving service delivery and outcomes for the child and family.

Review of the literature

No single, widely accepted definition of a client pathway exists. In a systematic review of the literature (2000-2003), DeBleser, Depreitere, Waele, VanHaecht, Vlayen, and Sermeus (2006) found 84 different terms describing client pathways, including clinical pathways, integrated care pathways, care pathways and care maps (p. 553). Coffey (1992) describes a critical pathway as a

"tool that defines optimal sequencing and point of time for various key events for a category of patients, or in certain cases for an individual patient. The basic critical pathway design consists of identifying significant standards, or key events, which form part of care of a specific category. The goals are chosen on the basis of 'best practice'. The next step is to define standards of expected care, treatment and the tests to be carried out. This is documented in a predetermined sequence during a specified time period. Thereafter, the various steps in the care process are reviewed to find ways to coordinate activities or to reduce the time required. Deviations in the care for the individual patient are documented in a variation schedule after which corrective actions are taken, if required. In the event of the care of the patient not proceeding as anticipated, information is fed back continuously to the ... staff and serves as a kind of education" (as cited in Walldal, Anund, & Furaker, 2002, p. 115).

Figure 1: Continuum of care: structures, care providers and processes



Source: National Council for the Professional Development of Nursing and Midwifery, 2006, Sept, p. 8).

Reported benefits of critical pathways include:

- Promoting evidence-based practice;
- Improving quality of care;
- Promoting continuity and coordination of care across different disciplines and sectors
- Standardizing care;
- Reducing variation;
- Reducing risks;
- Increasing efficiency;
- Promoting professionalism; and,
- Increasing job satisfaction (Debleser, et al., 2006; National Council for the Professional Development of Nursing and Midwifery, 2006).

Describing the journey (or flow) of a child through the service continuum (the “client pathway”) provides the foundation for critical pathway development and optimal service delivery for children and families. A multidisciplinary critical pathway is evidence-informed continuum of care that that identified structures and process that intervene at critical points to efficiently treat the patient and achieve defined outcomes. Critical care pathways

“provide a detailed guidance for each stage in the management of a patient (assessment, intervention and treatment) with a specific condition over a given time period, and include progress and outcome details. In particular integrated [critical] care pathways aim to improve the continuity and coordination of care across different disciplines and sectors.” (National Council for the Professional Development of Nursing and Midwifery, 2006, p. 8)

The client pathway audit could be considered a precursor to critical pathway development.

Background

Regional staff and families have expressed concern regarding delays in accessing service (Jensen-Ross & Gregory, 2008a, Jensen-Ross & Gregory, 2008 b); wait times for Children’s Community Assessment, Rehabilitation and Education Services (C.A.R.E.) were well recognized (Family Health

Annual Report, 2007-08¹). The Grow Along with Me Client Pathway Audit provided the opportunity to examine early childhood development check-ups and treatment services available for children 18-36 months and the movement of these children through the health care system.

Ultimately the project team aspired to:

- a) Provide children and their families timely screening and assessment services; and
- b) Adopt a consistent regional referral pathway across partnering service providers in relation to an identified developmental delay.

A summary of project goals, associated objectives, intended measures (i.e. indicators), data collection methods, and data collection frequency is located in Appendix A.

Research Question

The research question of interest was:

What was the system flow process (client pathway) experienced by children 18-36 months of age who completed the Ages and Stages Questionnaire (ASQ) between January 1, 2008 and Sept. 30, 2009 as part of the Grow Along with Me project?

Definitions

The GAWM flow process (client pathway): The current management (including service utilization and gateway interval/wait times) of Children's C.A.R.E. services for children 18-36 months whose Ages and Stages Questionnaire was received by Alberta Health Services (Chinook Health). The population of interest for the summative evaluation was children whose ASQ was received during the timeframe of the study, January 1, 2008 to December 30, 2009.²

Assessment/Treatment Time: Average (median, mode) time in days from date from first discipline-specific assessment to first discipline-specific treatment.

Community Development Screening Program (Community Screening Blitz): Regularly scheduled collaborative community screening events targeting children 18-36 months of age (Chinook Health Region, 2007).

Discipline-specific treatment to discipline-specific discharge: Time in days from first discipline-specific treatment to discipline-specific discharge.

Discipline-specific referral to discipline-specific discharge: Time in days from discipline-specific referral to discipline-specific discharge.

Cut-off point: Empirically derived score that indicates when a child's performance is suspect and referral for further assessment is appropriate (Squires, Potter & Bricker, 1999, p. 111)

¹ "In Quarter 4, 2007-08, approximately half of children referred to Children's C.A.R.E. received an initial assessment within the 90-day target timeframe.... The vast majority of children (90.0%) met the <=180-day waiting time target9compelled assessment to first treatment, range 84.8% {Occupational Therapy} to 100% {Behaviour Management Services, Infant Preschool Development})." (p. 8)

² A formative evaluation, Grow Along with Me Project Client Pathway audit. Exploring Child Developmental Checkups Apr. 2008 – Mar. 2009 (Jensen-Ross, C. & Gregory, D.) was released in June 2009.

Gateway points/gateway intervals: Key measurement points and intervening intervals between steps experienced by children receiving services through Children’s C.A.R.E. including:

- Date of referral to a specific discipline (Discipline-specific service request, DSSR)
- Date that appropriate intake forms were completed (Discipline-specific forms complete, DSFC)
- Date that the child received his/her first assessment (First recorded assessment visit in Meditech, Ax)
- Date that the child first received treatment (First recorded treatment visit in Meditech, Tx)
- Date of discipline-specific discharge (DSFC date in Meditech)

Intake wait time: Days from discipline-specific referral (speech language pathology [SLP], infant preschool development [IPD], occupational therapy [OT], physiotherapy [PT], behaviour management service [BMS], audiology [AUD]) to discipline-specific forms complete.

Intake to assessment wait time: Days from discipline-specific forms completed to first discipline-specific assessment.

Parent Link: Parent Link Centres (PLC) are provincially funded community organizations which “provide information and support for parents and caregivers on how to assist with your child’s learning, development and health.” (Alberta Government, 2010, p1)

Methodology

Study population

Children (18-36 months of age) who received a developmental check-up using the Ages and Stages Questionnaire (ASQ) and whose questionnaire was received by Children’s C.A.R.E. Services between January 1, 2008 and Sept. 30, 2009 were included in the study. Excluded were children where parents’ consent for participation in the Grow Along with Me Research Project was not obtained (see Appendix B). Duplicate Ages and Stages Questionnaires (completed for the same child for same age group by different partner agencies) were eliminated from the study (see Appendix C). Where coding differed between duplicate ASQs, the ASQ where the completion date most closely matched the child’s age at the time the ASQ was completed was retained and the duplicate record deleted.

ASQ Questionnaires allowed for the identification of children who were in need of further evaluation of communication, gross motor, fine motor, problem solving, personal-social skills and overall concerns. While nineteen age-specific ASQs (Version 2) were available,³ the eight questionnaires available for children 18 to 36 months of age were the focus of this project. The Ages and Stages Questionnaire has been identified as unique in having “sufficient psychometric properties to reliably identify developmental delays in the mild to moderate range” (Howard Research, 2006).

“Each questionnaire contains 30 developmental items that are written in simple, straightforward language.... Parents check yes to indicate that their child performs the behaviour (sic) specified in the item, sometimes to indicate an occasional or emerging response for their child, or not yet to indicate that their child does not yet perform the behaviour (sic)” (Bricker & Squires, n.d., p. 3).

³ Ages and Stages Questionnaires (version 2) were available for children 3, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 27, 30, 33, 36, 42, 48, 54, and 60 months of age.

“Cut-off points [were] derived by subtracting 2 standard deviations from the mean for each area of development (e.g. fine motor. For the [communication areas on the ... 18, 20, 22, 24, 27, 30 and 33 month questionnaires], one item [10 points] was added. Therefore, the mean for each area represents the average performance of large number of children. The standard deviation represents the amount of variance for each mean score, or how much scores are likely to vary in a particular area. The cut-off points... were generated to minimize the percentage of children overreferred and underreferred. The cut-off points vary by area of development and by questionnaire interval.” (Squires, Potter & Bricker, 1999, p. 73)

ASQ responses were converted to a point value; values were totalled and compared to screening cut-off points.

Upon receipt of the ASQ by Children’s C.A.R.E. Services, client demographic information and ASQ summary information were entered into the GAWM Master spreadsheet by the project data entry clerk. Flow maps of the processes experienced by children and their families completing the ASQ were depicted using Visio. Key indicators were defined and integrated into the evaluation plan (see Appendix D & E).

For children referred to Children’s C.A.R.E Services as a result of a positive check-up⁴ and/or other concerns were identified (e.g. parent-identified concern), critical discipline-specific gateway point information and associated dates were entered into the spreadsheet. Discipline-specific event timing was confirmed at the point of discharge using workload data recorded in the Meditech system. Where necessary, chart audits were conducted for data verification.

Approval for this study was received from the Chinook Health Research Committee, the Office of Information and Privacy (PIA #0036), and the University of Lethbridge Ethical Review of Human Subjects Research Committee.

Analysis

Statistical Package for the Social Science (SPSS, Version 14) and Predictive Analysis Software (PASW, Version 17.0.2) were used for univariate and bivariate analyses. Non-parametric statistical tests (Fishers Exact, Kruscal Wallis, Chi-square) were used, where appropriate, to analyze the differences between provider groups.

The determination of time intervals/wait times between key gateway points required that children had completed the distal endpoint of the process under examination (for example, determining the time from assessment to treatment required that the child had completed treatment [and had treatment data entered into Meditech]). Children who had not completed the (discipline-specific) distal endpoint were excluded from gateway interval/wait time analyses. Throughout the report, median gateway interval/wait times (in addition to mean gateway interval/wait times) have been reported because of nonparametric (non-symmetrical) data and small sample sizes.

Data field changes made in October 2008 ensured that multiple responses to a single question could be accommodated, discipline-specific service delivery flow could be clearly identified, and a unique identifier to each ASQ received could be assigned. This required that database elements be defined and harmonized between databases (see Appendix F & G for data dictionary and harmonization of data fields). Syntax files ensured consistency in analysis within and between measurement intervals. Measurement intervals were based on the fiscal year, for example, Quarter 1 included ASQs received

⁴ A score below cut-off in one of the 5 ASQ domains (Communication, Gross Motor, Fine Motor, Problem-solving, or Personal-Social).

by Children's C.A.R.E. Services between April and June, Quarter 2, July to September etc. Where possible, data has been presented by fiscal quarter to allow for comparison and trending.

Validity and Reliability

Chart audits were conducted to establish concordance between ASQ score tabulation in comparison to standards set by Squires, Potter, & Bricker (p. 66). Correlational analysis and Cronbach's co-efficient were used as a measure of ASQ reliability for this Southern Alberta population in comparison to their American counterparts. Kendall's tau-b⁵ was used to investigate the relationship between individual questions and ASQ domains (e.g. communication, gross and fine motor, problem-solving and personal-social) (see Thompson & Jensen-Ross, 2010).

Results and Discussion

The flow of children across the continuum (from developmental assessment/check-ups to referral, service delivery and discharge back to the community) has evolved over the course of the project. The most recent flow process (used by the Lethbridge Preschool Team) depicted in Figure 2 below is based upon revisions to the flow process initiated by the Grow Along with Me project in September 2009 (Figure 3). The original flow process (Mar. 2008 – April 2009) can be seen in Figure 4.

⁵ Due to data asymmetry, Kendall's tau-b was used in place of Pearson's correlation, Squires, Potter & Bricker, 1999)

EARLY CHILDHOOD DEVELOPMENT CHECKUP AND REFERRAL PROCESS
 LETHBRIDGE PRESCHOOL TEAM (REPRESENTATIVE OF SEPTEMBER 2009) V1
 NOVEMBER 30, 2009

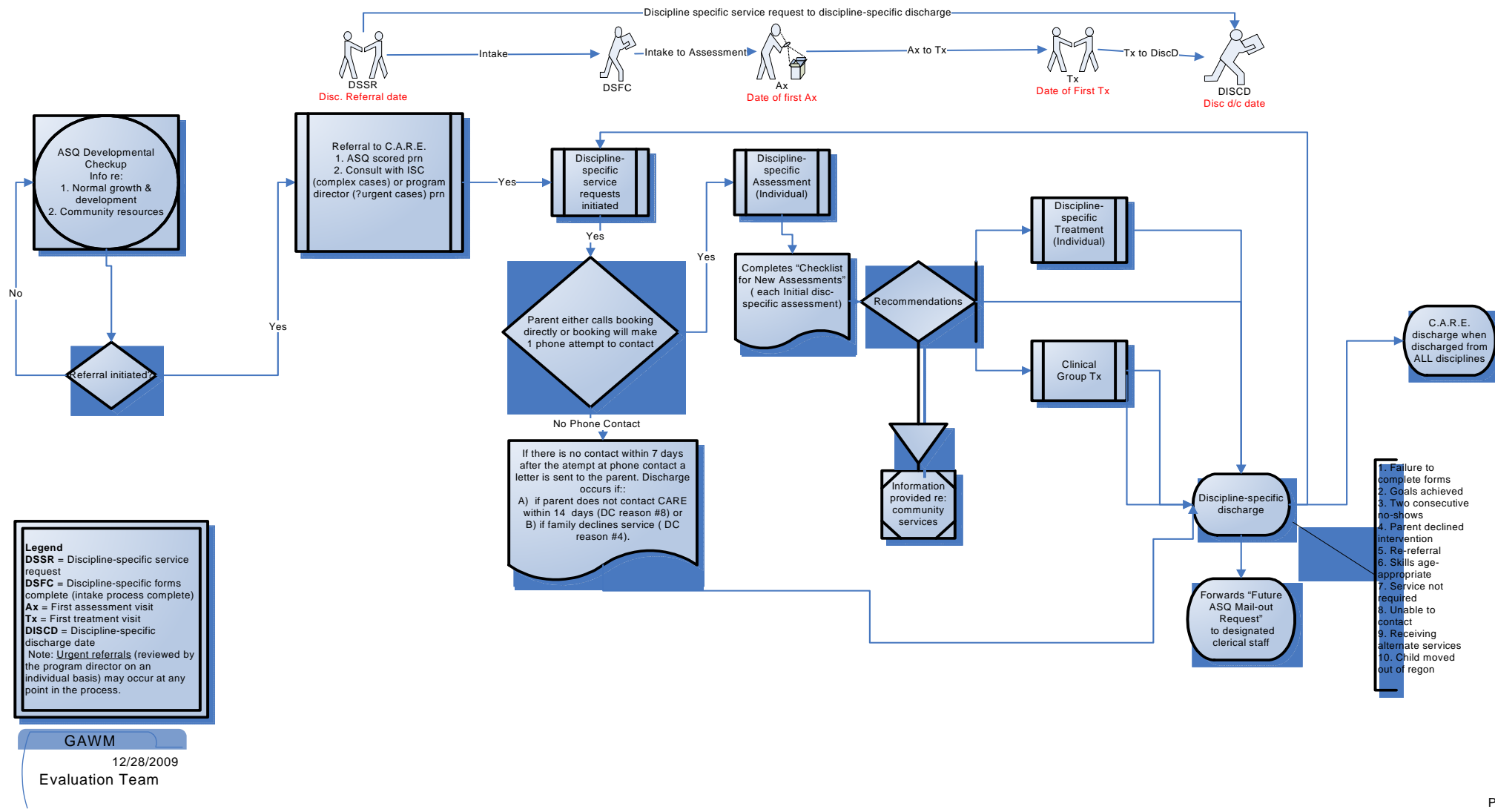


Figure 2 Early Childhood Development Checkup and Referral Process. Lethbridge Preschool Team (Moland, September 2009)

EARLY CHILDHOOD DEVELOPMENT CHECKUP AND REFERRAL PROCESS (EFFECTIVE APR 1, 2009) V2
 MONDAY, MAY 4, 2009

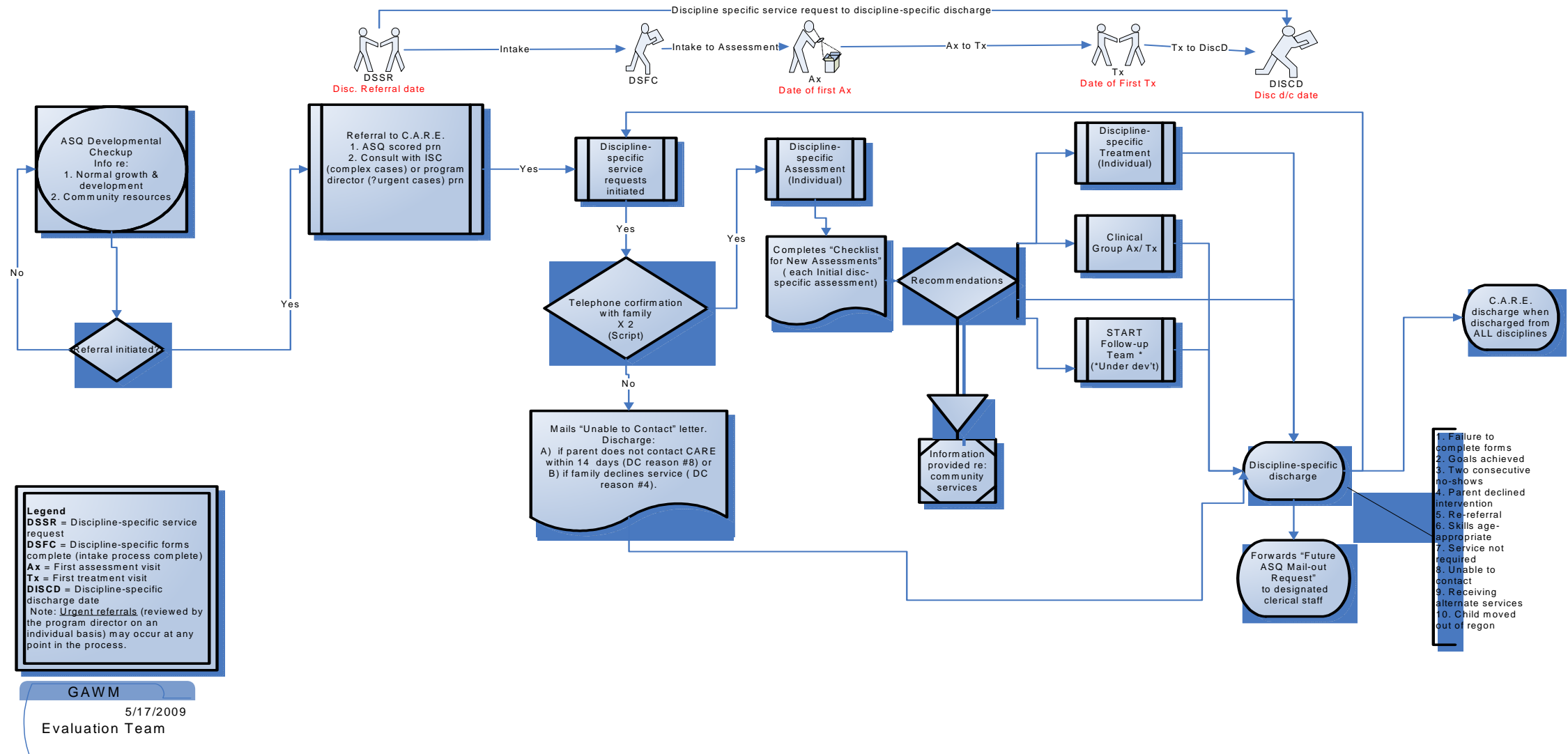


Figure 3 Early Childhood Development Checkup and Referral Process. Lethbridge Preschool Team (Apr. 2009 - September 2009)

EARLY CHILDHOOD DEVELOPMENT CHECKUP AND REFERRAL PROCESS V8
MONDAY, MARCH30, 2009

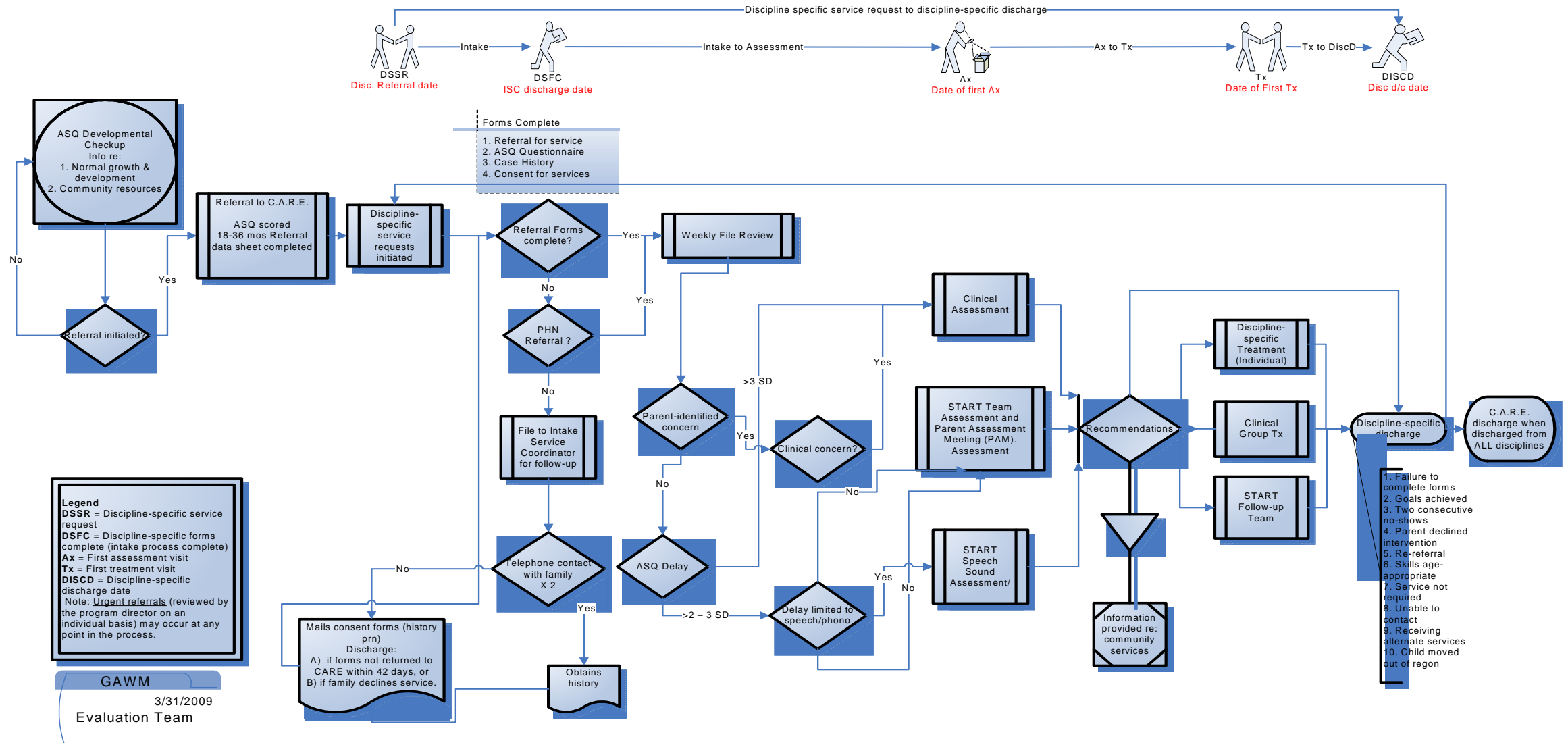


Figure 4 Early Childhood Development Checkup and Referral Process (March 2008 – Apr. 2009)

Consistent with project goals, mapping the movement of children along the client pathway has promoted consistency and clarity among service providers. System efficiency has been enhanced, for example, a) eliminating the START team assessment improved assessment efficiency and effectiveness, b) gateway interval/wait time bottlenecks were identified and addressed through regular data reviews and quality improvement initiatives, c) changes in the process of obtaining parental consent reduced intake wait time, and d) service providers were encouraged to work to their full scope of practice, for example, Grow Along with Me Educators participation in group assessment and intervention. The system was informed by timely, reliable, comparative evidence and responsive to identified needs. Process changes initiated were projected to enhance efficiency, reduce system errors, and decrease client wait for service delivery. Key pathway measures are presented in the section below, followed by discussion and observations made in relation to the data.

The table below shows the number of Grow Along with Me Ages and Stages Questionnaires completed for children 18-36 months in comparison to total ASQs received by Children’s C.A.R.E. services over the study timeframe.

Table 1 Ages and Stages developmental screening by fiscal year and quarter. Children’s C.A.R.E. and the Grow Along with Me project

GAWM Access Indicators	07-08	08-09				08-09	09-10	
	Q4	Q1	Q2	Q3	Q4		Q1	Q2
Ages and Stages Questionnaire (ASQ)								
Children/parents who completed the ASQ (C.A.R.E., All ages)*	367	603	396	500	515	2014	669	303
ASQs received with consent for evaluation (GAWM project) (including duplicate ASQs)	-	446	331	377	460	1614	488	293
Response rate		74.0%	83.6%	75.4%	89.3%	80.1%	72.9%	96.7%
Duplicate ASQs		16			12	28	5 ^	3 ^
ASQs received with consent for evaluation (GAWM project), no duplicates					448	1586	484	289

Source:

* Meditech All ages, ASQ Information Summary sheets, GAWM project consent forms

** G.A.W.M. Attendance sheets **

*** Includes duplicate consents (e.g. where more than one ASQ per child per age completed)

^ Duplicate ASQ crossed quarters

Note: A child may have had more than one ASQ completed per timeframe

- Ages and Stages questionnaires can be completed by parents at Well Child Clinic visits or at any one of the Grow Along with Me partner sites;
- Annual community-wide screening blitzes have contributed to the surges in ASQs completed in Quarter 1 of each fiscal year;
- Two thousand four hundred sixty (2,460) ASQs were submitted to C.A.R.E. between January 2008 and September 2009⁶. While a direct correlation between births and subsequent ASQ completion is currently unavailable, 4,642 children born in the CHR would have been 2 years of age during this timeframe (AHS, Chinook Health Records).

⁶ Note: In contrast to Table 1, ASQs submitted to C.A.R.E. Jan 2007- Sept. 2009 include duplicate ASQs and ASQs received in Quarter 4, 2007-08. In Table 1, referrals completed during the quarter, but not received by C.A.R.E. during the quarter may have resulted in an underestimation of the total ASQs received when examined over an extended timeframe.

- Over 96.7% of parents who completed ASQs in Q2, 09-10 agreed to participate in the Grow Along with Me evaluation study (n=292/303);
- With the exception of the most recent quarter (Q2, 09-10), the number of ASQs completed has continued to increase each quarter. Decreased screening rates in Q2, 09-10 may have been associated with lack of clarity regarding sustained project funding and associated staff vacancies.

ASQ administration by partner agencies is presented in the table below:

Table 2 Ages and Stages developmental checkups by administering agency⁷

ASQ Developmental Checkups by Administering Agency	2008-09					2009-10	
	Q1	Q2	Q3	Q4	2008-09	Q1	Q2
# of ASQs (GAWM project)	446	331	378	460	1615	488	293
ASQ administering agency	n=446	n=330	n=378	n=460		n=488	n=293
Alberta Health Service (AHS), Chinook, Wellness Services	53.1% (n=237)	75.8% (n=250)	73.5% (n=278)	74.1% (n=341)	68.5% (n=1,106)	65.4% (n=319)	82.6% (n=242)
Community developmental checkup	28.5% (n=127)	NA (n=0)	NA (n=0)	7.0% (n=32)	9.8% (n=159)	21.5% (n=105)	NA (n=0)
Alberta Health Service, Chinook, Children's C.A.R.E.	9.2% (n=41)	13.9% (n=46)	10.3% (n=39)	5.2% (n=24)	9.3% (n=150)	4.5% (n=22)	4.4% (n=13)
Parents as Teachers (PAT)	5.4% (n=24)	6.7% (n=22)	4.8% (n=18)	5.9% (n=27)	5.6% (n=91)	4.3% (n=21)	3.1% (n=9)
Parent Link Centres	2.5% (n=11)	1.5% (n=5)	4.8% (n=18)	4.8% (n=22)	3.5% (n=56)	1.4% (n=7)	2.0% (n=6)
AHS, Chinook, Home Visitation Program	1.3% (n=6)	2.1% (n=7)	6.6% (n=25)	3.0% (n=14)	3.2% (n=52)	2.9% (n=14)	7.8% (n=23)
Duplicate records	-	-	-	-	27	5*	3*
ASQs received in quarter (Duplicates removed)			376	449		484	289

- The ASQ is finding its way into community-based screening;
- Nearly ¾ (69.6%, n=1667/ 2396) of the 2008-09 developmental screening was completed by Public Health Nursing staff. It is important to note that over the timeframe of the study, while the relative proportion of ASQs completed have increased, actual number of ASQs decreased, possibly in relation to the enhanced focus on H1N1 seen in fall 2009. Decreased screening rates by partner agencies in Q2 may have been related to lack of sustainable project funding and associated decreases in project partner staff.
- The emerging role of community partners is reflected in the nearly 20% of screening done by partner agencies (Parents as Teachers [5.1%, [n=121/2395], Parent Link Centres [2.9%, n=69/2395]), and through coordinated community developmental check-ups [11.0%, n=264/2395]). Howard Research (1996) commented that: “it is unlikely that PLCs will have a significant impact on achieving universal screening rates using their current opportunistic screening approach” (p. 2).

That community partners (and community screening blitzes) have played an important role in initiating ASQs among children older than 18 months is illustrated in Figure 5 below, where a significant difference in ASQ distribution by age group was found (X^2 , 95% confidence, $p=.00$).

⁷ Total surveys received during the timeframe of the study may differ from this table as additional surveys may have been entered into the dataset

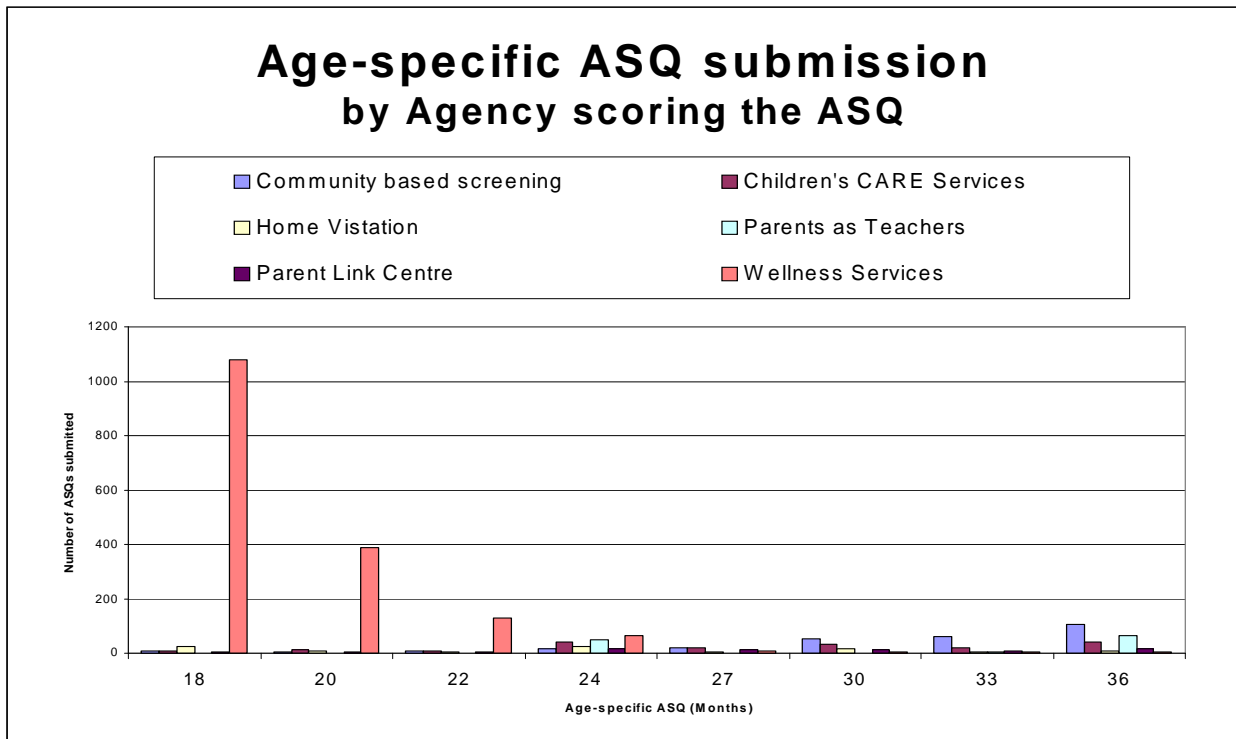


Figure 5 Age specific ASQ submission by agency, children with ASQ submitted to C.A.R.E. services Jan 2008 – Sept. 2009, N=2460.

- Howard Research (1996) suggested that “the majority of flagged children are referred to Public Health Nurses or physicians.” (p. 2) In this study population, PHN immunization/well-child visits triggered parent-completion of the ASQ. Where appropriate, referrals were made to skilled rehabilitation practitioners on an as-needed basis for further follow-up. The role of community partners in early identification of delays and parent education among the 24-36 month population is highlighted in the table above. This may be related to a lack of immunization visits scheduled for children in this age group. Physician referrals initiated in conjunction with the ASQ were not tracked as part of this project.
- Variation by quarter may be related to “batch” submission of screening results to Children’s C.A.R.E.;
- Communication with parents and among partners was essential to minimize duplication and minimize survey fatigue. Parents were given the primary responsibility for tracking and sharing their child’s progress with care providers. During the timeframe of the study, the duplicate ASQ completion decreased substantially⁸ (see Appendix C).

Grow Along with Me project boundaries are depicted in Figure 6 below:

⁸ The completion of more than one age-specific questionnaire is acceptable practice in certain situations. For example, each questionnaire is valid for one month before and one month after the indicated age – a “2 month window” (Squires, Potter & Bricker, 1999, p. 64). The authors suggest that “if a child’s age falls outside of the 2-month window, it may be useful to have the parents complete two questionnaires (for the preceding and subsequent age).”



Figure 6 Grow Along with Me Project ASQ distribution geographical area (former Chinook Health Region)

Access to universal screening for this geographically dispersed population was promoted by making check-ups available in rural and urban communities. ASQ completion by rural and urban residence corresponds to the overall geographical makeup of the Chinook Health population as seen in the Tables 3 & 4 below:

Table 3 Ages and Stages developmental checkups by residence*

Ages and Stages Questionnaires by Residence		2008-09			2009-10	
Location	Q2 n=331	Q3 n=376	Q4 n=449	Q1 n=484	Q2 n=293	
Lethbridge	55.2% (186/327)	47.5% (160/337)	48.1% (212/441)	52.4% (247/471)	55.6% (160/288)	
Total Urban	55.2% (186/327)	47.5% (160/337)	48.1% (212/449)	52.4% (247/471)	55.6% (160/288)	
Fort McLeod, Standoff, Monarch, Nobleford	7.6% (25/327)	0% (0/337)	0% (0/441)	0% (0/471)	0% (0/288)	
Blairmore, Coleman, Lundbreck, Pincher Creek	na	6.5% (22/337)	2.3% (10/441)	4.0% (19/471)	3.5% (10/288)	
Taber	9.5% (31/327)	12.5% (42/337)	8.8% (39/441)	5.7% (27/471)	8.3% (24/288)	
Coaldale	4.9% (16/327)	10.7% (36/337)	14.1% (62/441)	16.3% (77/471)	9.7% (28/288)	
Raymond/Cardston	-	-	-	-	10.4% (30/288)	
Other rural*	21.1% (69/327)	22.8% (77/337)	26.8% (118/441)	21.4% (101/471)	12.5% (36/288)	
Total Rural	43.1% (141/327)	52.5% (177/337)	51.9% (229/441)	47.6% (224/471)	44.4% (128/288)	
Out of region	2	10	0	-		
Missing data/out of region	2	29	8	13	5	

Source: GAWM Master Spreadsheet

* Includes: Barnwell, Blairmore, Coleman, Coutts, Del Bonitam, Enchant, Grassy Lake, Lundgreck, Magrath, Milk River, New Dayton, Picture Butte, Pincher Creek, Shaughnessey, Stirling, Vauxhall, Warner, (Raymond, Cardston tabulated separately Q2, 09-10)

Note:

- GAWM project service delivery (for the GAWM project) did not target children residing in the two First Nations Reserves falling within the former Chinook Health Region boundaries;
- Limited screening rates among the 18-36 month population cannot be generalized to the entire population of children receiving ASQ checkups per site.

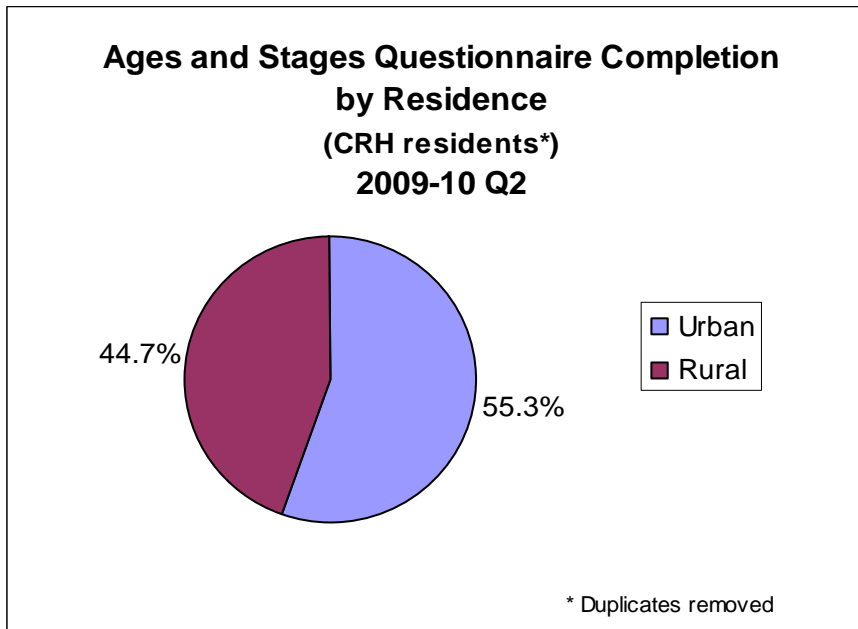


Figure 7 Ages and Stages developmental checkups by rural/urban residence, Q2, 09-10 (n=284/289)

Table 4 Ages and Stages Questionnaires by rural/urban residence

Ages and Stages Questionnaires by Residence	2008-09			2009-10	
	Q2	Q3	Q4	Q1	Q2
	n=331	n=376	n=449	n=484	n=293*
Urban	55.2%	47.5%	48.1%	52.4%	55.3%
Rural	43.1%	52.5%	51.9%	47.6%	44.7%

* Duplicates removed

ASQ completion by age group can be seen in the following table:

Table 5 Ages and Stages Questionnaires by age group

Ages and Stages Questionnaires by Age Group					
Age group	2008-09			2009-10	
	Q2	Q3	Q4	Q1	Q2
	n=331	n=376	n=449	n=484	n=293
18 mos.	58.9% (195/331)	51.3% (193/376)	48.1% (216/449)	39.3% (190/484)	55.6% (163/293)
20 mos.	14.2% (47/331)	17.0% (64/376)	21.2% (95/449)	17.4% (84/484)	21.2% (62/293)
22 mos.	4.5% (15/331)	6.1% (23/376)	7.3% (33/449)	5.6% (27/484)	6.1% (18/293)
24 mos.	8.5% (28/331)	9.0% (34/376)	5.8% (26/449)	9.1% (44/484)	7.2% (24/293)
27 mos.	3.0% (10/331)	2.9% (11/376)	1.1% (5/449)	2.3% (11/484)	1.7% (5/293)
30 mos.	4.8% (16/331)	4.8% (18/376)	3.1% (14/449)	4.8% (23/484)	2.7% (8/293)
33 mos.	0.9% (3/331)	3.2% (12/376)	3.1% (14/449)	5.6% (27/484)	0.3% (1/293)
36 mos.	5.1% (17/331)	5.6% (21/376)	10.2% (46/449)	16.1% (78/484)	5.1% (15/293)
Total	100.0% (331/331)	100.0% (376/376)	100.0% (449/449)	100.0% (484/484)	100.0% (293/293)

Source: GAWM Master Spreadsheet

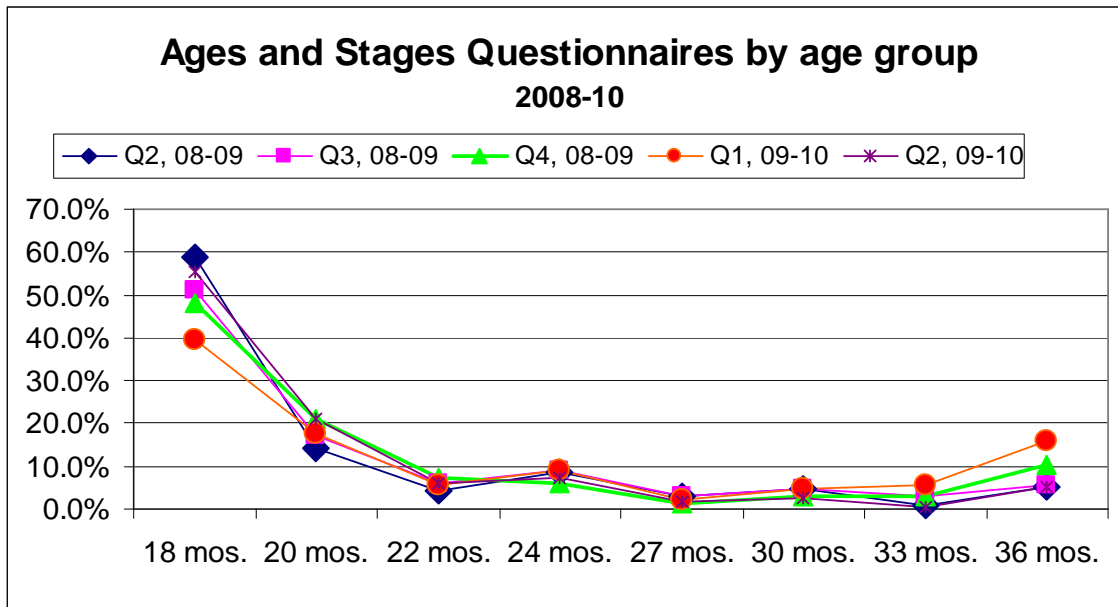


Figure 8 Ages and Stages Questionnaire by age group

- The vast majority of ASQs completed were 18 and 20 Month Questionnaires. This may reflect ASQ screening in conjunction with routine 18-month Well Child Clinic visits by Public Health Nurses (Wellness Services).

- Higher screening rates among children 30-36 months were seen in conjunction with the Spring 2009 developmental checkup blitz. This may reflect parental desire for developmental updates beyond regularly scheduled immunization timeframes. Consideration for resourcing (personnel, time and space) (e.g. community screening blitzes, community partner resourcing) must be taken into account (Howard Research, p. 3).

“Researchers typically recommend that screening occur at multiple ages covering a wide developmental time span with ability to track developmental trajectories over time” (American Academy of Pediatrics, 2001; Hall & Fletcher, 1992, Shevell et al., 2003; Squires et al., 1999 as cited in Howard Research 2009, p. 15). While consensus regarding optimal timing has not yet been established, skill development varies by developmental domain. For example, speech assessment “best practices” suggest that the optimal time for the assessment of some skills is after the age of two years; whereas motor development has been recommended to occur before the age of two years. Screening over time provides the opportunity for parents and community partners to track changes and identify delays early. The number of children who have had the targeted two screenings within the 18-36 month timeframe⁹ has increased. Sequential screening as at Sept. 30, 2009 can be seen in Figure 9 below:

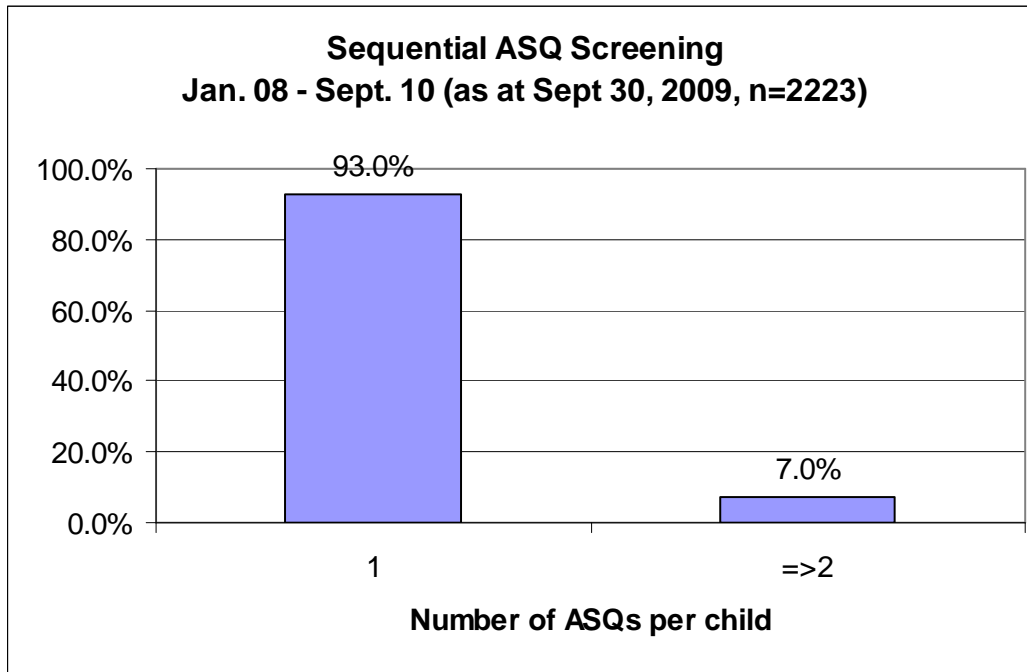


Figure 9 Children with sequential ASQs, 2008-09

Note: This table represents number and percentage of children screened (versus number of ASQs)

- Low rates of sequential screening may be related to the short study duration and inclusion of children who were near to the upper limits of age at the start of the study;
- A trend toward sequential ASQ testing over time has been seen (Two or more check-ups per child, formative evaluation (March 2009, 5.6%), summative evaluation (September 2009, 7.0%).

⁹ Target selected by GAWM project partners (former Chinook Health Region)

ASQ SUMMARY

The following table reflects domain-specific scores (communication, gross motor, fine motor, problem-solving and personal-social) and severity based on comparison to standardized norms¹⁰ (Squires, Potter & Bricker, 1999, p. 73).

Table 6 Delays as a proportion of total ASQs received by fiscal year (FY) quarter

Developmental Domain % Delay (Below ASQ Cutoff)	2008-09								2009-10			
	Q1, 08-09		Q2		Q3		Q4		Q1, 09-10		Q2	
	N=446		N=331		N=376		N=448		N=484		N=289	
	#	%	#	%	#	%	#	%	#	%	#	%
Communication delay*	63/444	14.2	38/331	11.4	43/376	11.4	49/448	10.9	55/484	11.4	36/289	12.5
No delay (<2 SD)	381/444	85.8	293/331	88.5	333/376	88.6	399/448	89.1	429/484	88.6	253/289	87.5
Mild-moderate (2-3 SD)	36/444	8.1	19/331	5.7	32/276	8.5	22/448	4.9	34/484	7.0	19/289	6.6
Severe (>3 SD)	27/444	6.1	19/331	5.7	11/376	2.9	27/449	6.0	21/484	4.3	17/289	5.9
Gross motor delay*	26/446	5.8	11/331	3.3	13/376	3.5	16/448	3.5	18/484	3.7	10/289	3.4
No delay (<2 SD)	420/446	98.6	320/331	96.7	363/376	96.5	432/448	96.4	466/484	96.3	279/289	96.5
Mild-moderate (2-3 SD)	15/446	3.4	7/331	2.1	7/376	1.9	10/448	2.2	15/484	3.1	7/289	2.4
Severe (>3 SD)	11/446	2.5	4/331	1.2	6/376	1.6	6/448	1.3	3/484	0.6	3/289	1.0
Problem-solving delay*	20/442	4.5	21/328	6.4	14/375	3.7	19/448	4.3	28/481	5.8	12/289	4.2
No delay (<2 SD)	422/442	95.5	307/328	93.6	361/375	96.3	428/447	95.8	453/481	94.2	277/289	95.8
Mild-moderate (2-3 SD)	12/442	2.7	9/328	2.7	9/375	2.4	12/447	2.7	12/481	2.5	8/289	2.8
Severe (>3 SD)	8/442	1.8	12/328	3.7	5/375	1.3	7/448	1.6	16/481	3.3	4/289	1.4
Fine motor delay*	19/445	4.3	19/331	5.7	14/373	3.8	15/449	3.3	18/483	3.8	15/287	5.2
No delay (<2 SD)	426/445	95.7	312/331	94.3	359/373	96.2	433/448	96.7	465/483	96.3	272/287	94.8
Mild-moderate (2-3 SD)	12/445	2.7	9/331	2.7	5/373	1.3	10/448	2.2	10/483	2.1	7/287	2.4
Severe (>3 SD)	7/445	1.6	10/331	3.0	9/373	2.4	5/449	1.1	8/483	1.7	8/287	2.8
Personal social delay*	18/445	4.0	22/330	6.6	14/376	3.7	16/448	3.5	20/481	4.1	12/289	4.1
No delay (<2 SD)	427/445	96.0	308/330	93.3	362/376	96.3	432/448	96.4	461/481	95.8	277/289	95.8
Mild-moderate (2-3 SD)	12/445	2.7	14/330	4.2	6/376	1.6	10/448	2.2	15/481	3.1	9/289	3.1
Severe (>3 SD)	6/445	1.3	8/330	2.4	8/376	2.1	6/448	1.3	5/481	1.0	3/289	1.0
Other												

¹⁰ ASQs received by quarter, duplicate Age-specific ASQs by child excluded.

Developmental Domain % Delay (Below ASQ Cutoff)	2008-09								2009-10			
	Q1, 08-09		Q2		Q3		Q4		Q1, 09-10		Q2	
	N=446		N=331		N=376		N=448		N=484		N=289	
Other	#	%	#	%	#	%	#	%	#	%	#	%
Do you think your child hears well? (% yes)	425/431	98.6	327/327	100	369/373	98.9	439/445	98.7	463/473	97.9	284/288	98.6
Do you think your child walks, runs, and climbs like (others his/her age)? (% yes)	420/434	96.8	314/330	95.2	364/374	97.3	434/445	97.5	453/474	95.6	282/287	98.3
Can you understand most of what your child says? (% yes)	378/431	87.7	275/327	84.1	325/370	87.8	390/436	89.4	406/468	86.8	243/281	86.5
Do you think your child talks like (others his/her age)? (% yes)	329/438	79.2	261/328	79.6	302/370	81.6	369/434	85.0	386/467	82.7	231/285	81.1
Other (Reverse Scoring)												
Do you think your child has hearing concerns? (% yes)	5/431	1.4	0/327	0	4/373	1.1	6/445	1.3	10/473	2.1	4/288	1.4
You have concerns that your child may not walk, run or climb like others his/her age? (% yes)	14/434	3.2	16/330	4.8	10/374	2.7	11/445	2.5	21/474	4.4	5/287	1.5
Do you have difficulty understanding most of what your child says? (% yes)	53/431	12.3	52/327	15.9	45/370	12.2	46/434	10.6	62/468	13.2	38/281	13.5
Do you think that your child experiences difficulty in talking at a level similar to others his/her age? (% yes)	109/438	20.8	67/328	20.4	68/370	18.4	65/434	15.0	81/467	17.3	54/285	18.9
Has your child had any medical problems in the last several months? (% yes)	75/434	17.3	51/327	15.6	51/371	13.7	69/440	15.7	76/473	16.1	40/287	13.9
Other concerns (% yes)	74/425	17.4	49/323	15.2	60/371	16.2	53/438	12.1	73/468	15.6	41/285	14.4
Does either parent have a family hx of childhood deafness or hearing impairment? (% yes)	29/432	6.7	37/328	11.3	28/372	7.5	34/445	7.6	41/469	8.7	15/284	5.3
Do you have any concerns about your child's vision? (% yes)	19/433	4.4	7/326	2.1	10/372	2.7	10/444	2.3	11/473	2.3	6/286	2.1

Source: A&S Questionnaire Summary

Note: Cutoffs change with ASQ age group

* Includes mild/moderate and severe delays

Note: The first 4 questions under the "Other section" are reverse-scored in Meditech and the research dataset in comparison to the original ASQ questions. Wording in the original tool is: 1. Do you think your child hears well? 2. Do you think your child walks, runs, and climbs like (others his/her age)? 3. Can you understand most of what your child says? 4. Do you think your child talks like (others his/her age)? Consistent with current Meditech reporting, the reporting of these indicators has been adapted to reflect proportion of children with identified delays.

- The vast majority of children had no developmental delays identified using the ASQ screening tool. Rates of delay for each domain (communication, gross motor, problem-solving, fine motor and personal social) by quarter ranged from 3.3% (fine motor, Q4, 08-09) to 14.2% (communication, Q1, 08-09)¹¹. Children’s C.A.R.E. Services referral rates ranged from 14.3% (Q4, 08-09) to 24.2% (Q1, 08-09) mean 18.5%, median 18.3% (see Table 7). This compares to a 20-30% “flag rate” found in the literature. (Howard Research, 2006, p. 2)
- For most domains, rates have fluctuated over time with no discernable pattern identified. With the exception of fine motor delays, the percentage of delays in each domain was lower at Q2 09-10 in comparison to Q4, 08-09 rates. This may be related to the increasing global reach (universal population-based approach rather than targeted ASQ distribution).
- Often parental concerns serve to clarify ASQ responses or provide insight into areas that require further follow-up. Over the timeframe of the study, the number of “other” concerns, for example regarding their child’s ability to talk like others, have decreased, possibly related to increased parental awareness of normal growth and development (stimulated by the ASQ questionnaire and educational resources) (see Appendix H for graphic display of developmental domains and severity over the timeframe of the study).

Referral Process: Children’s Community Assessment, Rehabilitation and Evaluation (C.A.R.E.) Services

Referrals

ASQs received by Children’s C.A.R.E. services were categorized as:

- a) New referrals;
- b) Existing C.A.R.E. clients;
- c) An urgent referral¹²; or,
- d) No referral required.

The breakdown by service category can be seen in the table below:

¹¹ Rates of parental concern that their child did not talk at a level similar to other children his/her own age were as high as 20.8% (Q1, 08-09).

¹² Urgent referrals trigger a process whereby children with significant concerns can be seen more quickly (e.g. within 4 weeks) (M. Moland, personal communication, May 13, 2008).

Table 7 C.A.R.E. referrals initiated as a result of the Ages and Stages Questionnaire

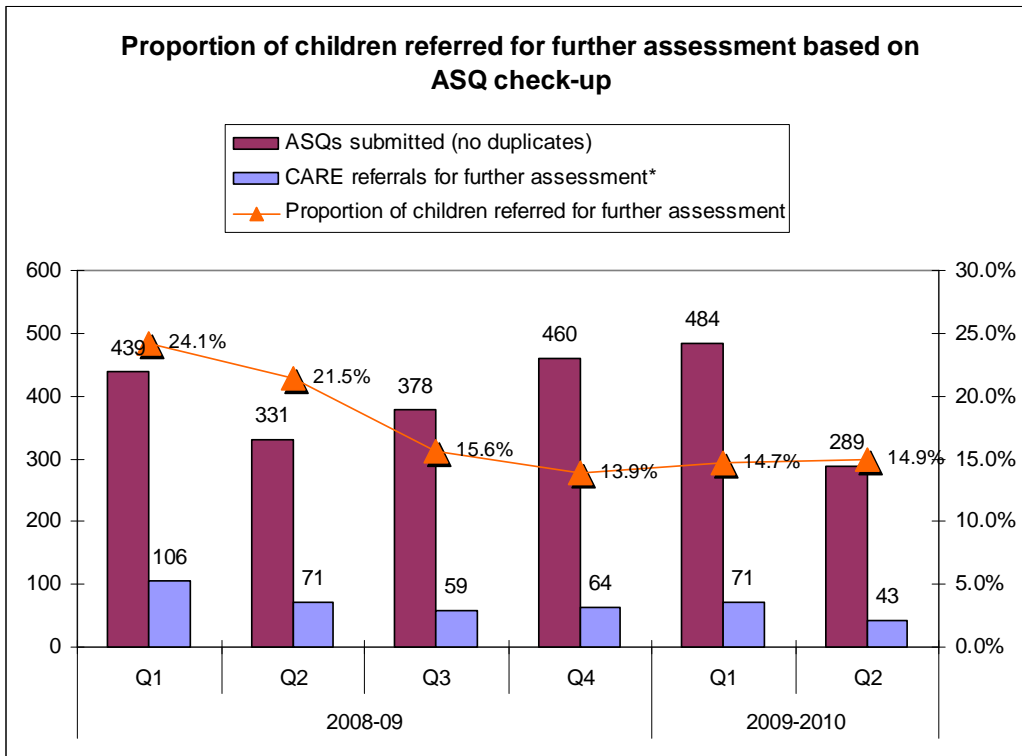
ASQ Developmental Check-ups. Identification of need for further evaluation	Q1, 08-09	Q2	Q3	Q4	Q1, 09-10	Q2
ASQs completed*	n=439	n=331	n=376*	n=449*	n=484*	n=289*
Referral rate	24.2% (106/438)	20.9% (71/339)	15.7% (59/376)	14.3% (64/449)	21.3% (103/484)	14.9% (43/289)
New referrals	17.6% (77/438)	15.7% (52/331)	9.6% (36/376)	9.8% (44/449)	14.7% (71/484)	8.3% (24/289)
Existing C.A.R.E. clients	6.6% (29/438)	5.7% (19/331)	6.1% (23/376)	4.2% (19/449)	6.6% (32/484)	6.6% (19/289)
Urgent referrals	NA	0% (0/331)	0.0% (0/376)	0.2% (1/449)	0.0% (0/484)	0.0% (0/289)
Subtotal	n=106	n=71	n=59	n=64	n=103	n=43
Not referred	75.8% (332/438)	78.5% (260/331)	84.3% (317/376)	85.7% (385/449)	78.7% (383/484)	85.1% (246/289)
Missing	n=1	-	-	-	-	-

Source: Meditech

* Duplicate ASQs removed

Note: Rates are reported by ASQ, not by child

- The urgent referral process was in place prior to the implementation of the Grow Along with Me project. The implementation of the START Process and other process improvement initiatives through primary care significantly reduced the reliance on the previous urgent process.



* includes children rereferred for discipline-specific treatment

Figure 11 ASQs submitted and C.A.R.E. referrals for further assessment by FY quarter

- Contrary to expectations, despite the increase in developmental checkups performed, “flag rates” for further assessment dropped and, at 15%, were less than half of the maximum projected service needs where the projected positive screen rate was 22 – 30%. (Chinook Health, 2006, 0. 19)

Table 8 New referrals by geographical residence

	2008-09		2009-10	
	Q3	Q4	Q1	Q2
Lethbridge	16	21	37	12
Blairmore, Pincher Creek, Lundbreck, Bellevue	2	0	4	0
Coaldale	4	5	10	3
Fort McLeod, Standoff, Monarch, Nobleford	0	0	0	0
Taber	4	2	4	3
Other rural*	8	12	8	5
Raymond		5	7	<3
Subtotal	34	45	70	24
<i>Missing or out of region</i>	2	0	1	0
Total	36	45	71	24

* Cardston, Coutts, Magrath, Shaughnessey, Welling, Etzikom, Picture Butte, Stirling, Foremost, Milk River

Source: GAWM Master Spreadsheet

Note: Includes urgent referrals

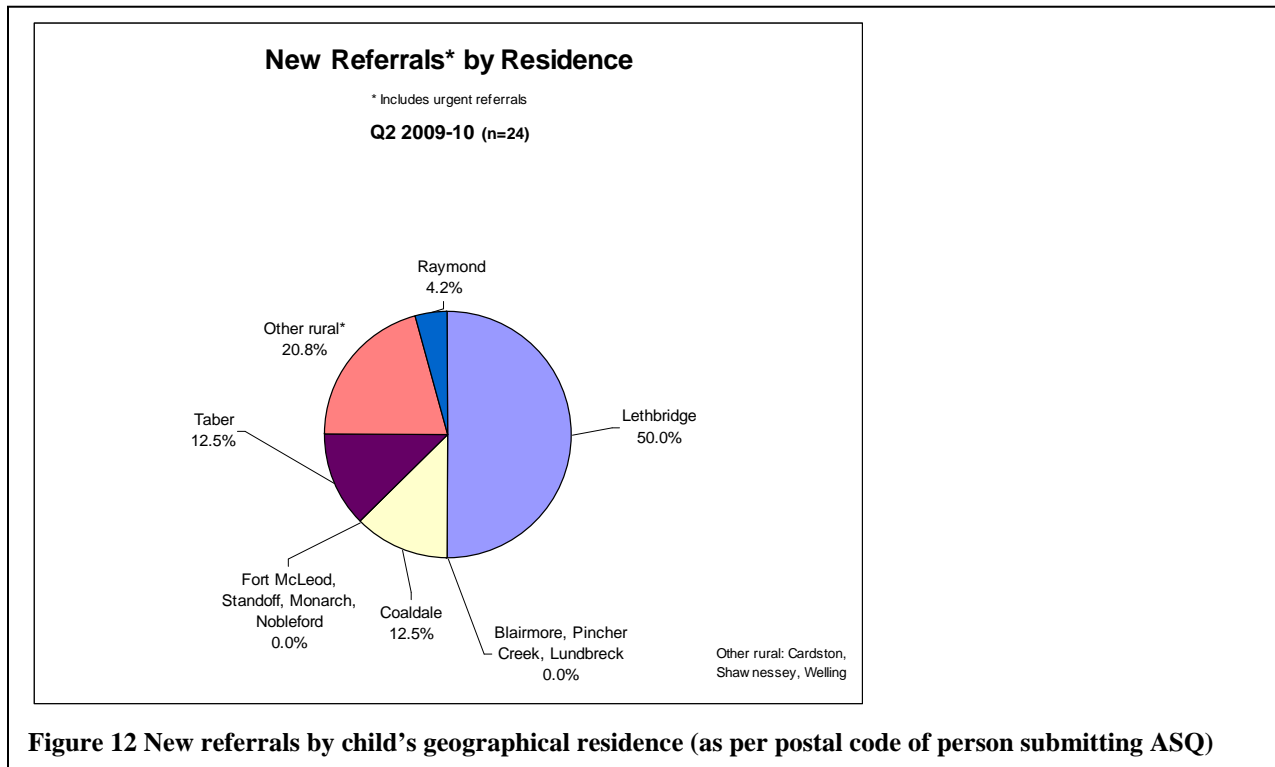


Figure 12 New referrals by child’s geographical residence (as per postal code of person submitting ASQ)

- o Nearly ¾ (74.5%, n=15/24) of children referred to Children’s C.A.R.E. in Q2, 09-10 lived within a 30 km radius of Lethbridge. This finding is consistent with the formative evaluation (Jensen-Ross & Gregory, 2009).

Children referred to Children’s C.A.R.E. in response to an ASQ check-up (including existing Children’s C.A.R.E. clients) often had multiple domains flagged further assessment as can be seen in the table below:

Table 9 C.A.R.E. Referrals by ASQ domain-specific severity (Q2, 08-09 to Q2, 09-10)

CARE Referrals (new, urgent, & existing) by Domain and Severity					
2008-09					
	Communication	Gross Motor	Fine Motor	Problem Solving	Personal - Social
Q2 (N=71)					
Severe	23.9% (n=17)	5.6% (n=4)	12.7% (n=9)	14.1% (n=10)	9.9% (n=7)
Mild/moderate	22.5% (n=16)	7.0% (n=5)	8.5% (n=6)	7.0% (n=5)	14.1% (n=10)
No delay	53.5% (n=38)	87.3% (n=62)	78.9% (n=38)	78.9% (n=56)	76.1% (n=54)
Q3 (N=59)					
Severe	15.3% (n=9)	10.2% (n=6)	5.1% (n=3)	8.5% (n=5)	11.9% (n=7)
Mild/moderate	28.8% (n=17)	5.1% (n=3)	10.2% (n=6)	6.8% (n=4)	5.1% (n=3)
No delay	55.9% (n=33)	84.7% (n=50)	84.7% (n=50)	84.7% (n=50)	83.1% (n=49)
Q4 (N=64)					
Severe	25.0% (n=16)	6.3% (n=4)	3.1% (n=2)	7.9% (n=5)	4.4% (n=2)
Mild/moderate	18.8% (n=12)	3.1% (n=2)	9.4% (n=6)	12.7% (n=8)	8.9% (n=4)
No delay	56.3% (n=36)	90.6% (n=58)	87.5% (n=56)	79.4% (n=50)	86.7% (n=39)
2009-10					
Q1 (N=103)					
Severe	17.5% (n=18)	2.9% (n=3)	7.8% (n=8)	10.7% (n=11)	4.9% (n=5)
Mild/moderate	26.2% (n=27)	6.8% (n=7)	6.9% (n=7)	5.8% (n=6)	10.8% (n=11)
No delay	56.3% (n=58)	90.3% (n=93)	85.3% (n=87)	83.5% (n=86)	84.3% (n=86)
Q2 (N=43)					
Severe	32.6% (n=14)	2.3% (n=1)	14.0% (n=6)	2.3% (n=1)	4.7% (n=2)
Mild/moderate	25.6% (n=11)	2.3% (n=1)	2.3% (n=1)	7.0% (n=3)	9.3% (n=4)
No delay	41.9% (n=18)	95.3% (n=41)	83.7% (n=36)	90.7% (n=39)	86.0% (n=37)

Source: GAWM Master Spreadsheet

- With the exception of communication, delay rates (mild, moderate or severe) in all other domains have remained stable or decreased over time. Reasons for the increase in communication delay rates over time require closer examination.

Domain-specific delay rates and severity of the delay among the general population of children 18-36 months of age are compared to delay rates for children referred to Children’s C.A.R.E. in the following table:

Table 10 Comparison of risk prevalence: General population of children who completed an ASQ in conjunction with the GAWM project and the subset of C.A.R.E. referrals for further assessment

ASQ Risk Indicators by Age Group & Severity. Total Population and CARE Referrals (GAWM Project)					
	Communication	Gross Motor	Fine Motor	Problem Solving	Personal - Social
All children referred to Children's CARE as a result of ASQ * N=2425					
Severe (> 3 SD)	6.0% (n=131/2406)	1.4% (n=33/2408)	1.8% (n=44/2400)	2.4% (n=58/2394)	1.5% (n=37/2404)
Mild/moderate (2-3 SD)	7.0% (n=169/2406)	2.7% (n=64/2408)	2.4% (n=57/2400)	2.5% (n=59/2394)	2.9% (n=70/2404)
No delay(<2 SD)	87.5% (n=2106/2406)	96.0% (n=2311/2408)	95.8% (n=2229/2400)	95.1% (n=2277/2394)	95.5% (n=2297/2404)
Missing data/rereferrals (no ASQ)	19	17	25	31	21
Children referred to CARE ** as a result of ASQ , N=482					
Severe (> 3 SD)	22.2% (n=103/463)	5.8% (n=27/465)	7.1% (n=33/462)	8.9% (n=41/461)	6.5% (n=30/463)
Mild/moderate (2-3 SD)	23.1% (n=107/463)	6.7% (n=31/465)	6.5% (n=30/462)	7.2% (n=33/461)	9.1% (n=42/463)
No delay(<2 SD)	54.6% (n=253/463)	87.5% (n=407/465)	86.4% (n=399/462)	83.9% (n=387/461)	84.4% (n=391/463)
Missing data/rereferrals (no ASQ)	19	17	20	21	19

Source: GAWM Master Spreadsheet, * Nov. 3, 2009

** includes urgent referrals and children currently on CARE caseload

- As expected, domain risk scores among children 18-36 months of age referred to Children's C.A.R.E. show a distinctly higher rate of delay than that of the general population of children 18-36 months of age.

Table 11 C.A.R.E. Referrals by age at time of referral

CARE referrals by age **	2008-09			2009-10	
	Q2	Q3	Q4	Q1	Q2
16-20 months of age	54.3% (19/35)	48.8% (20/41)	31.1% (14/45)	40.2% (41/103)	55.8% (24/43)
21-25 months of age	25.7% (9/35)	24.4% (10/41)	28.9% (13/45)	17.6% (18/103)	18.6% (8/43)
26-30 months of age	8.6% (3/35)	12.2% (5/41)	13.3% (6/45)	6.9% (7/103)	7.0% (3/43)
31-35 months of age	11.4% (4/35)	7.3% (3/41)	11.1% (5/45)	26.5% (27/103)	9.3% (4/43)
36-40 months of age	0% (0/35)	7.3% (3/41)	15.6% (7/45)	8.8% (9/103)	9.3% (4/43)
Missing variables	50.7% (36/71)	0	0	1	0

* Includes New referrals, referrals where child was already on C.A.R.E. caseload, and urgent referrals. Excludes rereferrals.

**Children where ASQ received by CARE during the quarter of interest

Source: GAWM Master Excel Spreadsheet, 2009 Apr Gold

- Consistent with the trend of ASQs completed at an early age, the majority of children referred to Children's C.A.R.E. (74.4%) were under 26 months of age;
- Sequential ASQ completion and community developmental screening blitzes may have contributed to the increased proportion of referrals of children 30-36 months (see Figure 5).

Risk indicators by *age group* and *severity*¹³ can be found in Appendix I.

Multidisciplinary referrals

Table 12 Multidisciplinary referrals. New referrals initiated by ASQ check-up by FY quarter

ASQ Developmental Check-ups	Q1, 08-09	Q2	Q3	Q4	Q1, 09-10	Q2
Multidisciplinary referrals	n=77	n= 52	n=36	n=45	n=71	n=24
One discipline	74.0% (67/77)	71.2%, (37/62)	63.9% (23/36)	68.9% (31/45)	62.0% (44/71)	58.3% (14/24)
Two or more discipline	18.2% (24/77)	25.0% (13/52)	36.2% (13/52)	28.9% (13/45)	38.0% (27/71)	41.6% (10/24)
Undecided	7.8% (6/77)	3.8% (2/52)	-	13.3% (6/46)	-	-
Range	na	na	na	na	1-6	1-3

Source: GAWM Master Spreadsheet. Includes new referrals, urgent referrals and children already on CARE caseload at time of referral. Excludes children who have been discharged and referred for CARE services.

- There has been an upward trend toward multidisciplinary referrals, possibly associated with enhanced community partner awareness of C.A.R.E. services available, increased cross-disciplinary communication, and the multisystem nature of early childhood development. Children’s C.A.R.E. philosophy reflects the importance of a coordinated, multidisciplinary approach.

Consistent with the Continuum of Care model (p. 4), the “Grow Along With Me’ the evidence compiled in conjunction with the integrated pathway audit is presented in the following sections: assessment, intervention, treatment and planned treatment outcomes.

Assessment. Children referred to C.A.R.E. for further assessment based on the ASQ check-up

Effective April 2009 (Q1, 2009-10), the multidisciplinary START assessment process (with direct discipline-specific referral) was replaced at specific sites (e.g. Lethbridge preschool, Taber OT, PT & IPD) by direct discipline-specific referrals based upon ASQ and/or parent-identified needs. In conjunction with the Primary Care project, various processes are being trialed to determine those most effective in reducing service gateway interval/wait times (see Figures 1-3).

Treatment

Total assessment/treatment time for children discharged after intervention during the timeframe of the study are presented in the table below. Given the asymmetrical nature of the data, use of the *median* assessment/treatment time is preferable to use of the mean for comparison purposes.

¹³ for all children who received a developmental check-up using the Ages and Stages Questionnaire and whose ASQ was submitted to Children’s CARE between January 2008 and September 2009

Table 13 Assessment/Treatment Times by Discipline Jan. 2008 – Sept. 2009

	n=	Mean	Median	Mode	Range	Standard Deviation	Missing/Not applicable
Assessment/Treatment Time (Hours) (Limited to children discharged after intervention Jan. 2008 - Sept. 2009)							
Speech Language Pathology	46	10.8	7.0	6.5	0.8 - 50	8.5	42
Infant Preschool Development Educator	26	4.2	4.1	5.0	1-8.3	1.7	15
Occupational Therapy	4	6.2	5.1	1.2	1.2 - 13.5	5.5	4
Physiotherapy	3	2.1	2.25	1.7	1.7 - 2.5	0.4	3
Behavior Management Specialist	3	4.8	3.0	2.5	2.5 - 8.8	3.5	0
Audiology	0	na	na	na	na	na	-

Source of Data: Meditech, GAWM Master Spreadsheet (April 2009 GOLD)

Note: Negative wait times (e.g. reversed order of sequence) recoded to wait time = 0

- Median assessment/treatment time varies by discipline (range 2.3 hours to 7.0 hours), with the longest assessment/treatment time reported for children receiving speech-language services;
- Treatment approaches and measurement of treatment outcomes vary by clinician. Godlee (2009) has suggested that within a new healthcare paradigm, quality care (effective, safe, and delivering a good patient experience) must also be efficient. “This means eliminated “clinical waste”... unwarranted variation in what we do and how we do it.” (p3) It is within area of wide variation that we “have the most scope to increase quality and reduce cost”. Godlee also suggests that variation is “only bad where there is strong evidence for a specific course of action.... Where there is no strong evidence, eliminating such variation would drive out essential innovation.” (Lechler, as cited in Godlee, 2009, p4)

Discharge

The discharge of a child from a specific discipline is referred to as a discipline-specific discharge (e.g. a child discharged from speech language services would be considered a SLP discharge). As many children receive services concurrently from various disciplines, a child is not discharged from C.A.R.E. services until the child is discharged from all disciplines where services are being received. C.A.R.E. discharges were not tracked in the research dataset; the focus of this section is discipline-specific referrals. Discipline-specific discharges can occur at any point along the service continuum (after intake/referral, after initial assessment, and after intervention).

Discipline-specific referrals and discharges (by point of discharge)¹⁴ are presented in the table below:

14 All children who ASQ was received by Children’s CARE during January 2008 to September 2009 (Excludes 6 ASQs received in October 2009).

Table 14 Discipline-specific referrals and discharges (by point of discharge) Jan. 2009 – Sept. 2009

Point of (discipline specific) discharge: GAWM Project n=635*												
	SLP		IPD		OT		PT		BMS		AUD	
Discipline-specific referrals	310		147		40		38		14		86	
Discipline-specific discharges	187		119		28		28		8		61	
% discharge/referral	60%		81%		70%		74%		57%		71%	
	#	%	#	%	#	%	#	%	#	%	#	%
After intake/referral	44	23.8	17	15.1	11	37.9	8	28.6	1	12.5	12	19.7
After initial assessment/screen	84	45.4	54	45.4	11	41.4	16	57.1	5	62.5	43	70.5
Subtotal (Before treatment)	128	69.2	71	60.5	22	79.3	24	85.7	6	75.0	55	90.2
After intervention	57	30.8	48	39.5	6	20.7	4	14.3	2	25.0	6	9.8
Missing	2	100		100		100		100		100		100
Total	187		119		28		28		8		61	

Source: GAWM Master Spreadsheet, Meditech

* ASQ discipline-specific referrals. Includes rereferrals, Excluded discipline-specific discharges after Sept. 30, 2009

- In total, 67.9% (n=431/635) of discipline-specific referrals received by Children’s C.A.R.E. between January 1, 2008 and Sept. 30, 2009 were discharged from that discipline by Sept. 30, 2009 (Range 57.1% [BMS] – 81% [IPD])
- High rates of discharge following the assessment may have been related enhanced parent capacity in association with the education provided as part of the assessment process.
- Nearly ¾ of children (71%, n=306/431) were discharged prior to receiving treatment (range 60.5% [IPD] - 90.2 % [AUD]). This may have implications for short-term service delivery options and/or group services. Review and modification of the intake process through the Primary Care Initiative has also reduced steps and improved efficiency and timeliness of access.

Table 15 Discipline-specific discharge by discharge point and reason

Reasons for discharge by point of discharge								
	After intake referral		After initial assessment		After intervention		Total	
All Discipline-specific Discharges N=431	#	%	#	%	#	%	#	%
Failure to complete forms	23	24.7%	0	0.0%	0	0.0%	23	5.4%
Goals achieved	0	0.0%	1	0.5%	15	12.2%	16	3.7%
Two consecutive no-shows	8	8.6%	12	5.6%	3	2.4%	23	5.4%
Parent declined intervention	25	26.9%	40	18.8%	10	8.1%	75	17.5%
Rereferral	0	0.0%	1	0.5%	18	14.6%	19	4.4%
Skills age appropriate	8	8.6%	74	34.7%	26	21.1%	108	25.2%
Service not required	4	4.3%	45	21.1%	39	31.7%	88	20.5%
Unable to contact	19	20.4%	19	8.9%	6	4.9%	44	10.3%
Receiving alternate services	6	6.5%	19	8.9%	6	4.9%	31	7.2%
Moved	0	0.0%	2	0.9%	0	0.0%	2	0.5%
Missing	0		0		0		2	
Total discharges (n)	93	100.0%	213	100.0%	123	100.0%	431	100.0%

Source: GAWM Master Spreadsheet

- Discharges after intake (as a proportion of total discharges) decreased by nearly half in comparison to earlier reports (formative evaluation [Mar. 2009] 43.9%, summative evaluation [Sept. 2009] 24.7%). Discharge for failure to complete forms decreased to 0% in Q2, 09-10 due to process changes (April 2009) that allowed parents to complete forms at the initial parent assessment meeting rather than prior to initiating the assessment.

- Nearly 25% of referrals were declined by parents. When limited to children discharged¹⁵ in Q2, 09-10, the proportion of children who were discharged due to service declined by parents decreased to 14.5% (n=12/86) This may reflect enhanced parental understanding regarding the importance of early intervention or may signify that referrals for C.A.R.E. assessment may have been initiated without parental awareness.
- 19% (n=82/431) of children discharged upon a more detailed, discipline-specific assessment were deemed to have skills appropriate for their age. This decrease from previous rates may reflect a reduced number of “false positives” identified through screening. Rates of children who required no further service following intake and/or assessment visit (16.3%, n=50/306) may have been related to enhanced parent capacity, stimulated by parental education, follow-up activities and resource information made available during the parent sessions.
- After intervention, 20.5% of children no longer required service. The reason that service was no longer required remained unclear. For this reason, it is suggested that this code be eliminated from the dataset and replaced with the “root cause”. Over one-quarter of children (28.9%, n=128/431) had age-appropriate skills at discharge or their goals had been achieved. Fewer than 5% (3.9%, n=17/431) of children were rereferred for further service. These children were placed back into the cue for service to await the next available discipline-specific appointment.

Discipline-specific assessment/treatment time for children discharged was further analyzed based upon discharge timing (discharge point) (e.g., a) after intake/assessment b) after intake/referral and c) after treatment). Results can be seen in the following tables:

Table 16 Discipline specific discharge. Reasons for discharge

Reasons for discharge: GAWM project N=2402												
	SLP		IPD		OT		PT		BMS		AUD	
	#	%	#	%	#	%	#	%	#	%	#	%
Goals achieved	6	3.2	9	7.6	-	-	1	3.6	-	-	-	-
Skills age appropriate	45	24.1	18	15.1	5	17.8	4	14.3	-	-	36	59.0
Subtotal	51	27.3	27	22.7	5	17.8	5	17.9	0	0	36	59.0
Two consecutive no-shows	13	7.0	3	2.5	2	7.1	-	-	-	-	5	8.2
Parent declined intervention	34	18.2	22	18.5	8	28.6	8	28.6	1	12.5	3	4.9
Rereferral	19	10.2	-	-	-	-	-	-	-	-	-	-
Failure to complete forms	12	6.4	4	3.4	3	10.7	4	14.4	-	-	-	-
Service not required	11	5.9	50	42.0	7	25.0	10	35.7	3	37.5	8	13.1
Unable to contact	24	12.8	10	8.4	3	10.7	1	3.6	-	-	5	8.2
Receiving alternate services	21	11.2	3	2.5	-	-	-	-	4	50.0	4	6.6
Moved	2	1.1	-	-	-	-	-	-	-	-	0	-
Total	187	100	119	100	28	99.9	28	100	8	100	61	100

Source: GAWM Master Spreadsheet, Meditech

15 Discipline-specific discharge. Rates varied by service provider group as follows: SLP 20%, n=8/10, IPD 12.5%, n=2/6, OT 100%, n=1/1, PT 0% , n=0/3, BMS 0%, 0/4 and Audiology 4.5%, n=1/4)

Table 17 Reasons for discharge by point of discharge and discipline

Reasons for discharge by point of discharge								
	After intake referral		After initial assessment		After intervention		Total	
	#	%	#	%	#	%	#	%
SLP Discharge N=187								
Failure to complete forms	12	27.3%	0	0.0%	0	0.0%	12	6.5%
Goals achieved	0	0.0%	1	1.2%	5	8.8%	6	3.2%
Two consecutive no-shows	5	11.4%	5	6.0%	3	5.3%	13	7.0%
Parent declined intervention	10	22.7%	19	22.6%	4	7.0%	33	17.8%
Rereferral	0	0.0%	1	1.2%	18	31.6%	19	10.3%
Skills age appropriate	1	2.3%	32	38.1%	12	21.1%	45	24.3%
Service not required	0	0.0%	4	4.8%	6	10.5%	10	5.4%
Unable to contact	10	22.7%	9	10.7%	5	8.8%	24	13.0%
Receiving alternate services	6	13.6%	11	13.1%	4	7.0%	21	11.4%
Moved	0	0.0%	2	2.4%	0	0.0%	2	1.1%
Missing	0	0.0%	0	0.0%	0	0.0%	2	
Total discharges (N)	44	100.0%	84	100.0%	57	100.0%	187	100.0%
IPDE Discharge N=119								
Failure to complete forms	4	23.5%	0	0.0%	0	0.0%	4	3.4%
Goals achieved	0	0.0%	0	0.0%	9	18.8%	9	7.6%
Two consecutive no-shows	2	11.8%	1	1.9%	0	0.0%	3	2.5%
Parent declined intervention	8	47.1%	9	16.7%	5	10.4%	22	18.5%
Rereferral	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Skills age appropriate	0	0.0%	9	16.7%	9	18.8%	18	15.1%
Service not required	0	0.0%	26	48.1%	24	50.0%	50	42.0%
Unable to contact	3	17.6%	7	13.0%	1	2.1%	11	9.2%
Receiving alternate services	0	0.0%	2	3.7%	0	0.0%	2	1.7%
Moved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total discharges (N)	17	100.0%	54	100.0%	48	100.0%	119	100.0%
OT Discharge N=28								
Failure to complete forms	3	27.3%	0	0.0%	0	0.0%	3	10.7%
Goals achieved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Two consecutive no-shows	0	0.0%	2	18.2%	0	0.0%	2	7.1%
Parent declined intervention	4	36.4%	3	27.3%	1	16.7%	8	28.6%
Rereferral	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Skills age appropriate	1	9.1%	4	36.4%	0	0.0%	5	17.9%
Service not required	2	18.2%	0	0.0%	5	83.3%	7	25.0%
Unable to contact	1	9.1%	2	18.2%	0	0.0%	3	10.7%
Receiving alternate services	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Moved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total discharges (N)	11	100.0%	11	100.0%	6	100.0%	28	100.0%
PT Discharge N=28								
Failure to complete forms	4	50.0%	0	0.0%	0	0.0%	4	14.3%
Goals achieved	0	0.0%	0	0.0%	1	25.0%	1	3.6%
Two consecutive no-shows	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Parent declined intervention	2	25.0%	6	37.5%	0	0.0%	8	28.6%
Rereferral	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Skills age appropriate	0	0.0%	4	25.0%	0	0.0%	4	14.3%
Service not required	1	12.5%	6	37.5%	3	75.0%	10	35.7%
Unable to contact	1	12.5%	0	0.0%	0	0.0%	1	3.6%
Receiving alternate services	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Moved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total discharges (N)	8	100.0%	16	100.0%	4	100.0%	28	100.0%
BMS Discharge N=8								
Failure to complete forms	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Goals achieved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Two consecutive no-shows	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Parent declined intervention	0	0.0%	1	20.0%	0	0.0%	1	12.5%
Rereferral	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Skills age appropriate	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Service not required	1	100.0%	2	40.0%	0	0.0%	3	37.5%
Unable to contact	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Receiving alternate services	0	0.0%	2	40.0%	2	100.0%	4	50.0%
Moved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total discharges (N)	1	100.0%	5	100.0%	2	100.0%	8	100.0%

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Reasons for discharge by point of discharge								
	After intake referral		After initial assessment		After intervention		Total	
AUD Discharge N=61	#	%	#	%	#	%	#	%
Failure to complete forms	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Goals achieved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Two consecutive no-shows	1	8.3%	4	9.3%	0	0.0%	5	8.2%
Parent declined intervention	1	8.3%	2	4.7%	0	0.0%	3	4.9%
Rereferral	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Skills age appropriate	6	50.0%	25	58.1%	5	83.3%	36	59.0%
Service not required	0	0.0%	7	16.3%	1	16.7%	8	13.1%
Unable to contact	4	33.3%	1	2.3%	0	0.0%	5	8.2%
Receiving alternate services	0	0.0%	4	9.3%	0	0.0%	4	6.6%
Moved	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total discharges (N)	12	100.0%	43	100.0%	6	100.0%	61	100.0%

Source: GAWM Master Spreadsheet

- The number of children discharged after intake or assessment as a proportion of all children discharged during the timeframe of the study varied by discipline (range 59.7% [n=71/119], IPDE to 90.2% [55/61], Audiology). This rate exceeded 75% for occupational therapy (78.6%, n=22/28), physiotherapy (85.7%, n=24/28), behaviour management (75.0%, n=6/8) and audiology services (90.2%, n=55/61). These may be disciplines where a team of “short term service” clinicians may be beneficial for reducing overall service gateway interval/wait times. Consideration of alternate service availability for long-term clients may be an option for reducing service gateway interval/wait times.
- Small sample sizes limit the generalizations that can be made from this data. It must be noted that many of the children referred during the timeframe of this study have not completed their treatment. Observations of the above data include:
 - High rates of failure to complete forms noted in the formative evaluation have been eliminated as a service-delivery bottleneck through process changes initiated in April 2009.
 - Inability to contact parents (ranging from 3.6-13.2% of children discharged) may be related to service availability (and parental contact) only during daytime hours.

Gateway interval/wait times

Improving access to services (including reducing gateway interval/wait times) is a key goal for Alberta Health Services (Alberta Health Services, 2009). Dovetailing into this provincial goal, gateway interval/wait times were a critical component of the client pathway audit. Median discipline-specific gateway interval/wait time from referral to discharge by quarter is presented in Figure 13:

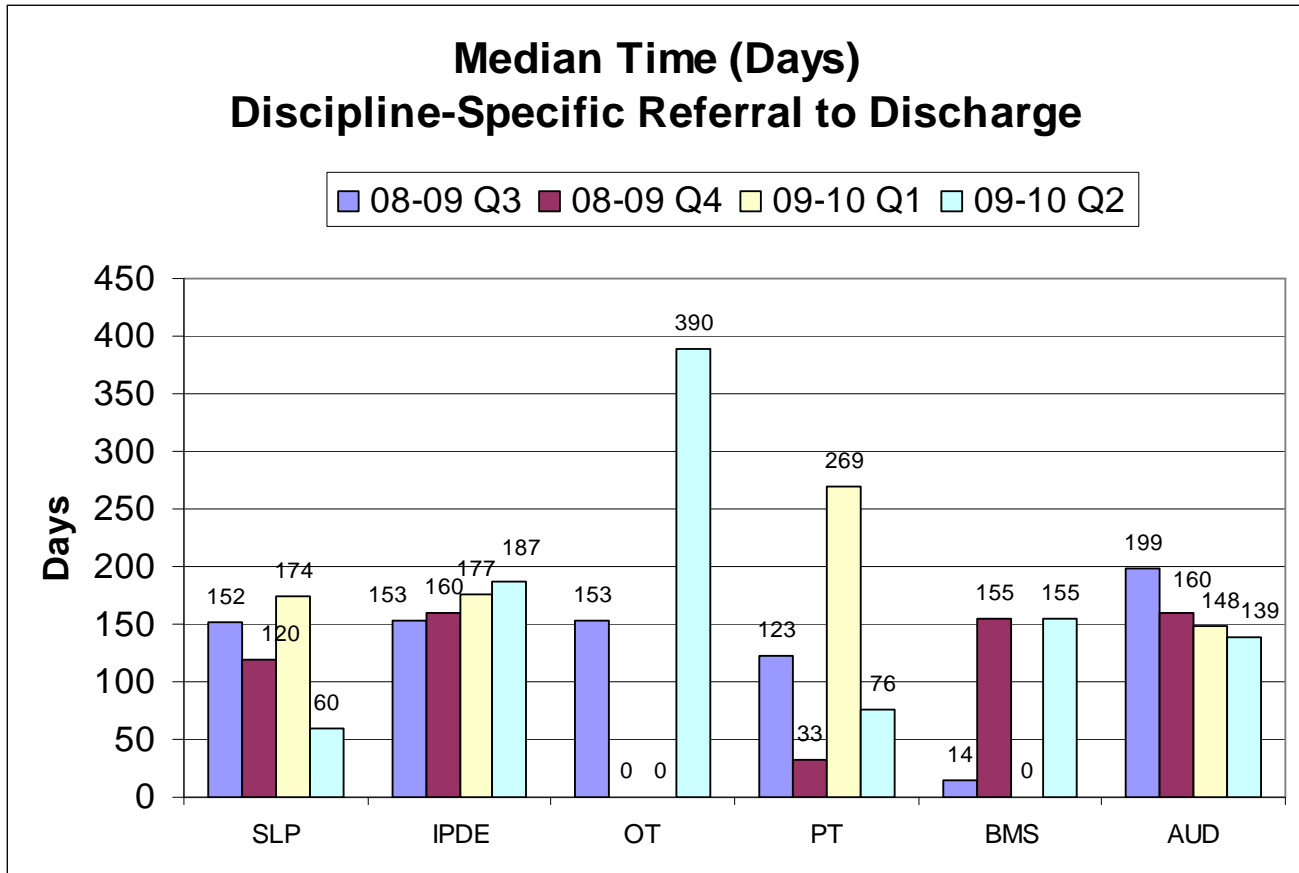


Figure 13 Median time (days): Discipline-specific referral to discipline-specific discharge

- Median time from referral to discharge has decreased substantially in Q2, 09-10 in comparison to the previous quarter for SLP, PT and Audiology services and has remained stable for BMS services. Elimination of intake wait (initiated as a result of participation in the Primary Care Project) may have contributed to this decrease in discipline-specific service timeframes. In contrast, time from referral to discharge for occupational therapy services has increased substantially and time from referral to discharge for IPDE services have continued to climb during this timeframe. Seasonal variation related to the school year and summer vacation may be reflected in the above findings. Between-discipline variance in time from referral to discharge may be an area for further exploration.

Discipline-specific gateway interval/wait times ¹⁶ by gateway interval are depicted in the following table:

Table 18 Discipline-specific gateway interval/wait times. GAWM Project

Discipline-specific Gateway Interval/Wait Times Jan 08- Sept. 09						
	n=	Mean	Median	Mode	Range	Standard Deviation
Intake Wait Time (Days)						
Speech Language Pathology	306	32.0	24.0	0	0-168	32.2
Infant Preschool Development Educator	147	28.9	15.0	0	0-153	38.3
Occupational Therapy	40	25.2	17.5	0	0-153	31.7
Physiotherapy	37	39.0	21.0	0	7-204	49.8
Behavior Management Specialist	13	12.0	0.0	0	0-119	32.5
Audiology	na	na	na	na	na	na
Intake To Assessment Wait Time (Days)						
Speech Language Pathology	225	39.4	26.0	15.0	0-251	40.88
Infant Preschool Development Educator	105	52.36	27.0	21.0	0-456	66.8
Occupational Therapy	26	47.8	24.5	0.0	0-305	64.9
Physiotherapy	17	38.17	29.0	16.0	1-114	30.0
Behavior Management Specialist	6	13.5	11.5	1.0	1-35	13.0
Audiology	68	121.5	108.5	35.0	0-412	89.3
Assessment to Treatment (Days)						
Speech Language Pathology	115	75.1	57.0	13.0	0-425	69.1
Infant Preschool Development Educator	62	39.2	27.0	19.0	0-235	38.2
Occupational Therapy	10	53.7	23.0	0.0	0-201	72.9
Physiotherapy	7	40.1	40.0	15.0	15-72	19.5
Behavior Management Specialist	3	77.3	66.0	31.0	31-135	52.9
Audiology	na	na	na	na	na	na
Assessment/Treatment Time (Hours) (Limited to children discharged after intervention Jan. 2008 - Sept. 2009)						
Speech Language Pathology	46	10.8	7.0	6.5	0.8 - 50	8.5
Infant Preschool Development Educator	26	4.2	4.1	5.0	1-8.3	1.7
Occupational Therapy	4	6.2	5.1	1.2	1.2 - 13.5	5.5
Physiotherapy	3	2.1	2.25	1.7	1.7 - 2.5	0.4
Behavior Management Specialist	3	4.8	3.0	2.5	2.5 - 8.8	3.5
Audiology	0	na	na	na	na	na
Treatment to Discipline-specific Discharge (Days)						
Speech Language Pathology	65	132.3	91.0	73.0	29-378	86.63
Infant Preschool Development Educator	46	116.7	96.0	21.0	15-367	79.6
Occupational Therapy	6	162.0	158.5	0.0	0-308	99.3
Physiotherapy	4	132.3	141.5	0.0	0-246	102.0
Behavior Management Specialist	3	91.7	130.0	0.0	0-145	79.7
Audiology	55	37.2	0.0	0.0	0-379	75.1
Discipline-specific Referral to Discipline-specific Discharge (Days)						
Speech Language Pathology	202	163.0	123.0	232.0	1-576	131.1
Infant Preschool Development Educator	119	150.0	135.0	77.0	1-580	112.7
Occupational Therapy	29	179.6	153.0	7.0	7-470	143.6
Physiotherapy	28	103.0	81.0	18.0	10-412	96.8
Behavior Management Specialist	8	136.0	133.0	14.0	14-259	89.1
Audiology	68	165.0	149.5	199.0	8-497	116.7

Source of Data: Meditech, GAWM Master Spreadsheet (April 2009 GOLD)

Note: Negative wait times (e.g. reversed order of sequence) recoded to wait time = 0

¹⁶ All children whose ASQ was received between January 2008 and September 2009

- Averaged across disciplines, *median* gateway interval/wait times were:
 - Intake wait time – 15.5 days
 - Intake to assessment – 37.8 days (Excluding audiology outlier of 23.6 days)
 - Assessment to first treatment – 42.6 days
 - Treatment to discharge – 102.3 days

Over the timeframe of the study, discipline-specific gateway interval/wait times *exceeding average median* time across disciplines (and where further investigation to reduce time intervals may be focused) were:

- Intake wait time – Speech-language *, occupational and physiotherapy* (Q2, 09-10, IPDE*)
- Intake to assessment – All service providers with the exception of behaviour management (Q2, 09-10 Audiology*)
- Assessment to first treatment – Speech-language* and behaviour management
- Treatment to discharge – Occupational* and physiotherapy*, behaviour management

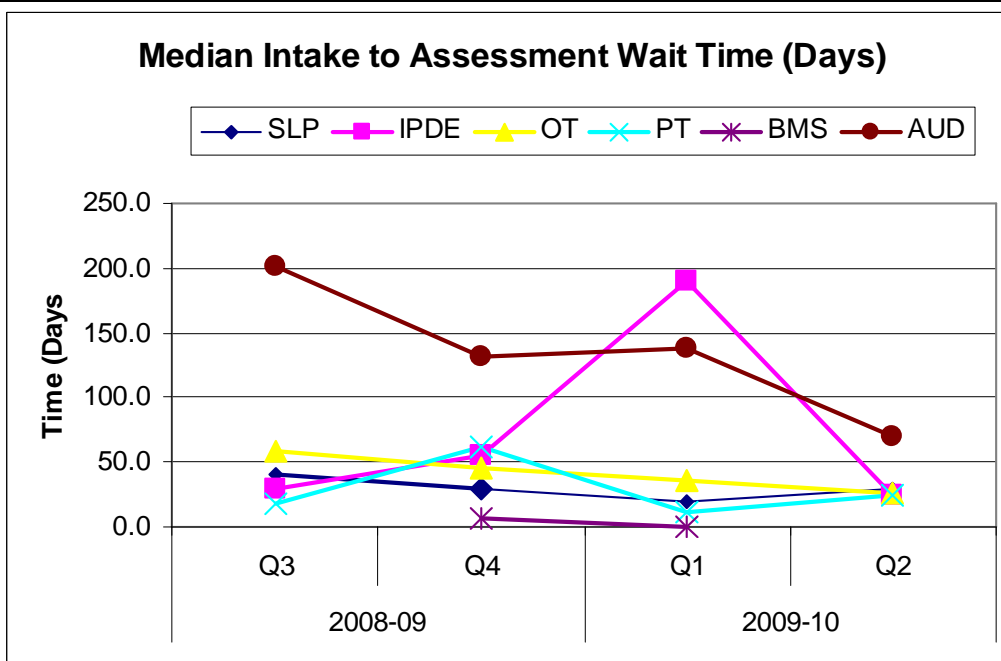
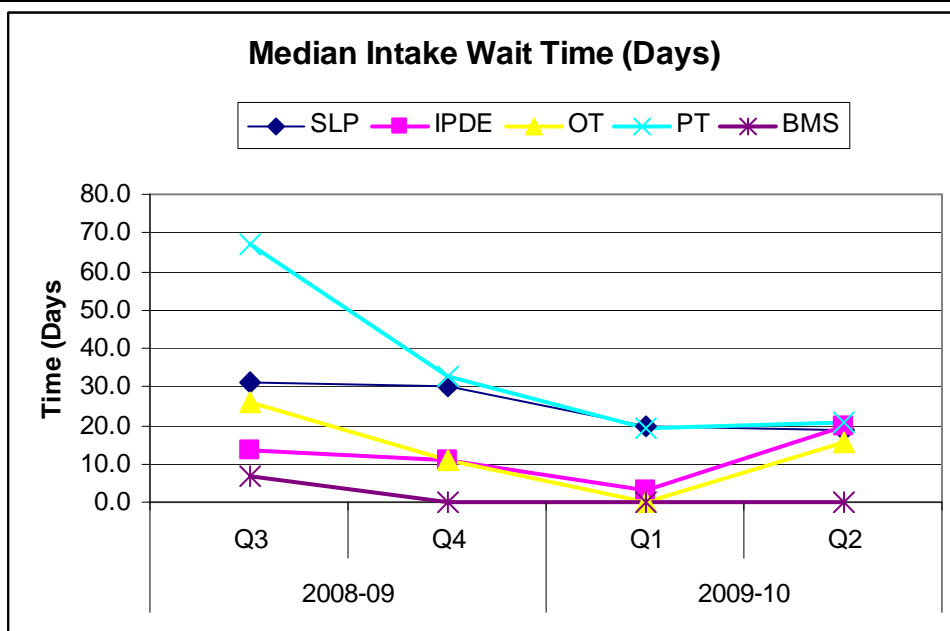
Gateway interval/wait times that continued to exceed between discipline average median times in Q2, 09-10 have been identified with a *.

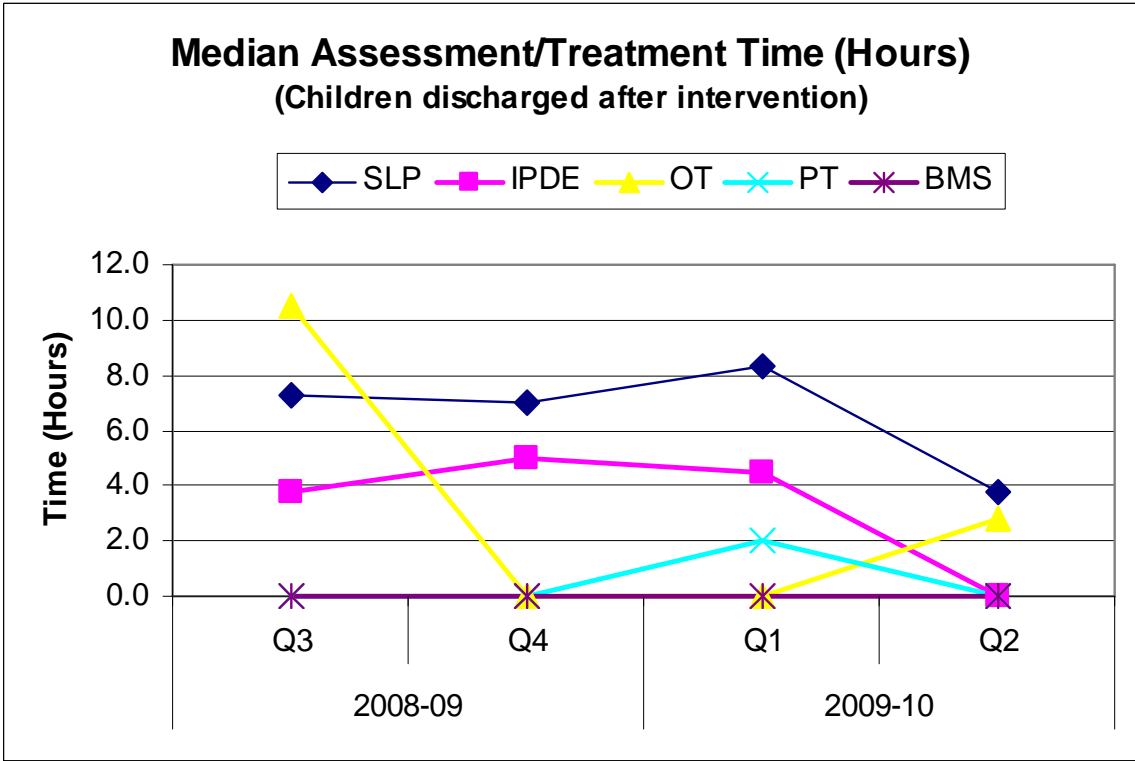
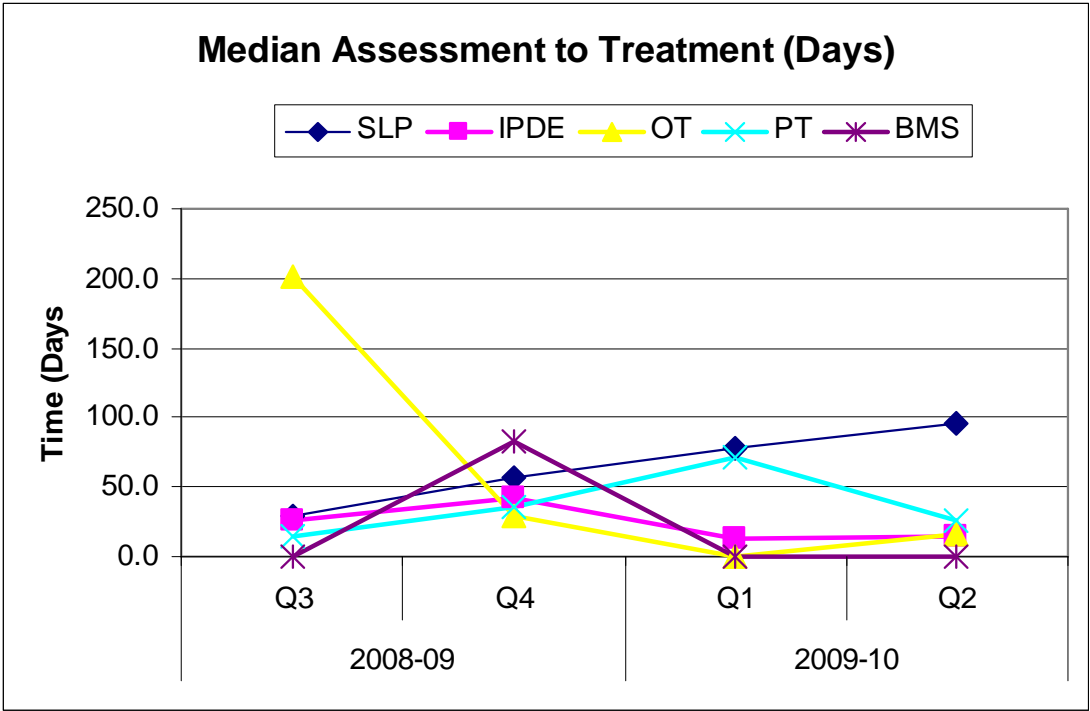
It is expected that recent changes in the intake process should, over time (and with the discharge of clients admitted prior to the process change) eliminate intake wait time.

A comparison of gateway interval/wait time trends by quarter are depicted in the figures below (see Appendix J for detailed tables):

Gateway Interval/Wait Times

*Note: Gateway Intervals of "0" represent no clients meeting the criteria during the quarter.





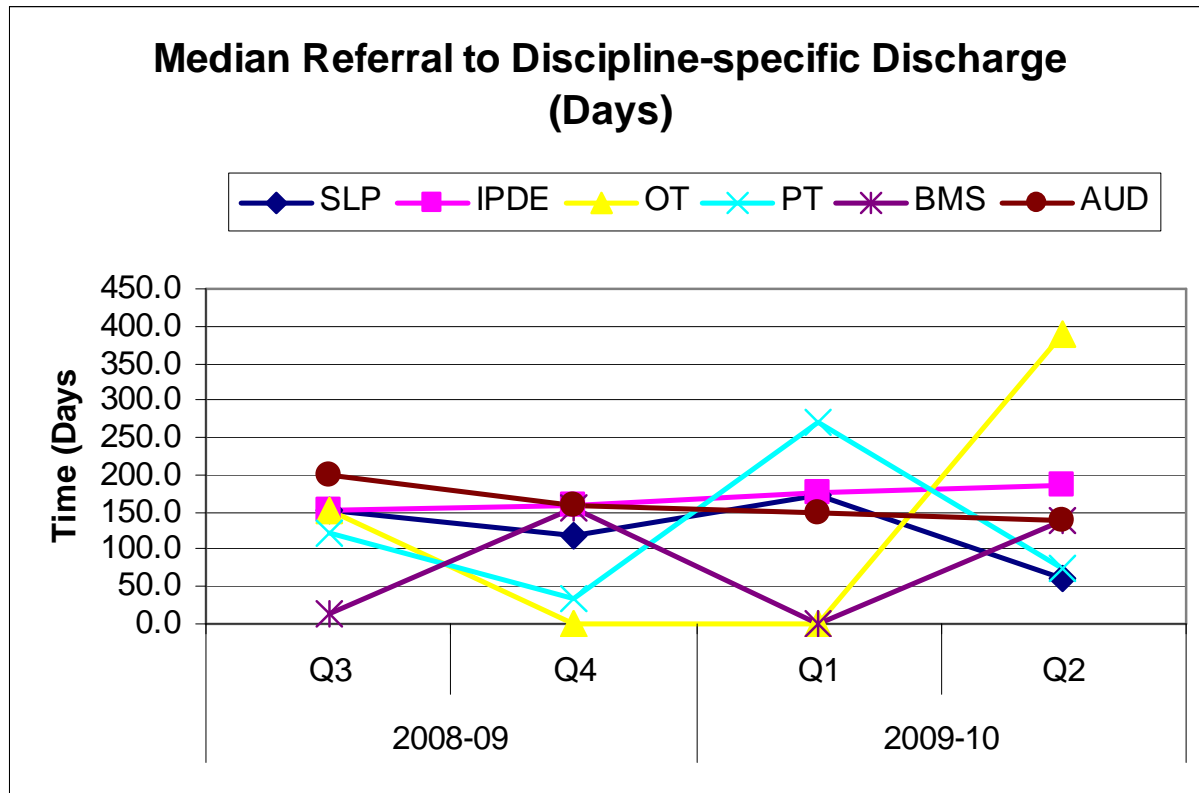


Figure 14 Gateway Interval/Wait Time Trends by Discipline

- Outliers positively skew (and artificially increase) gateway interval/wait times. The variances between mean and median discipline-specific gateway interval/wait times suggest the need to examine outlier cases within each discipline. Elimination of outliers and secondary analysis of outlier files would provide further insight as to the source of the variation;
- A trend toward decreased between-provider variance for speech-language, occupational and physiotherapy services has been seen, possibly related to strategic examination of the data prompted by this project and the Primary Care Initiative;
- Prolonged service delivery time may have been impacted by decreased staff availability and reduced service delivery during summer months (e.g. Q2);
- Strategies to reduce gateway interval/wait times may include reducing demand (e.g. through population segmentation - short term vs. long term, reducing variation and increasing supply (e.g. through increased use of therapy assistants, and increasing community service support [e.g. Families First]) to provide services to children with mild delays (Carlisle, 2006, Howard Research, 2006, Wise, 2009); Reduction of duplication across ministries may further reduce duplication.

- Quality improvement initiatives involving front-line service providers may be useful in identifying other suggestions to improve service delivery and efficiency;
- Continued trending of data may provide useful in determining cyclical or seasonal variations.

In comparison to the previous quarter, in Q2, 09-10

- Median wait times for intake increased for all disciplines with the exception of SLP;
- Median intake to assessment wait times decreased sharply for OT, IPDE, and Audiology services; and increased for SLP & PTs;
- Treatment to discharge time increased for all disciplines (with the exception of PT);
- Summer staffing and service delivery may have inflated the time duration for all gateway intervals.
- Review and modification of the intake process through the Primary Care Initiative may have contributed to reducing process steps and improving efficiency and timeliness of access.

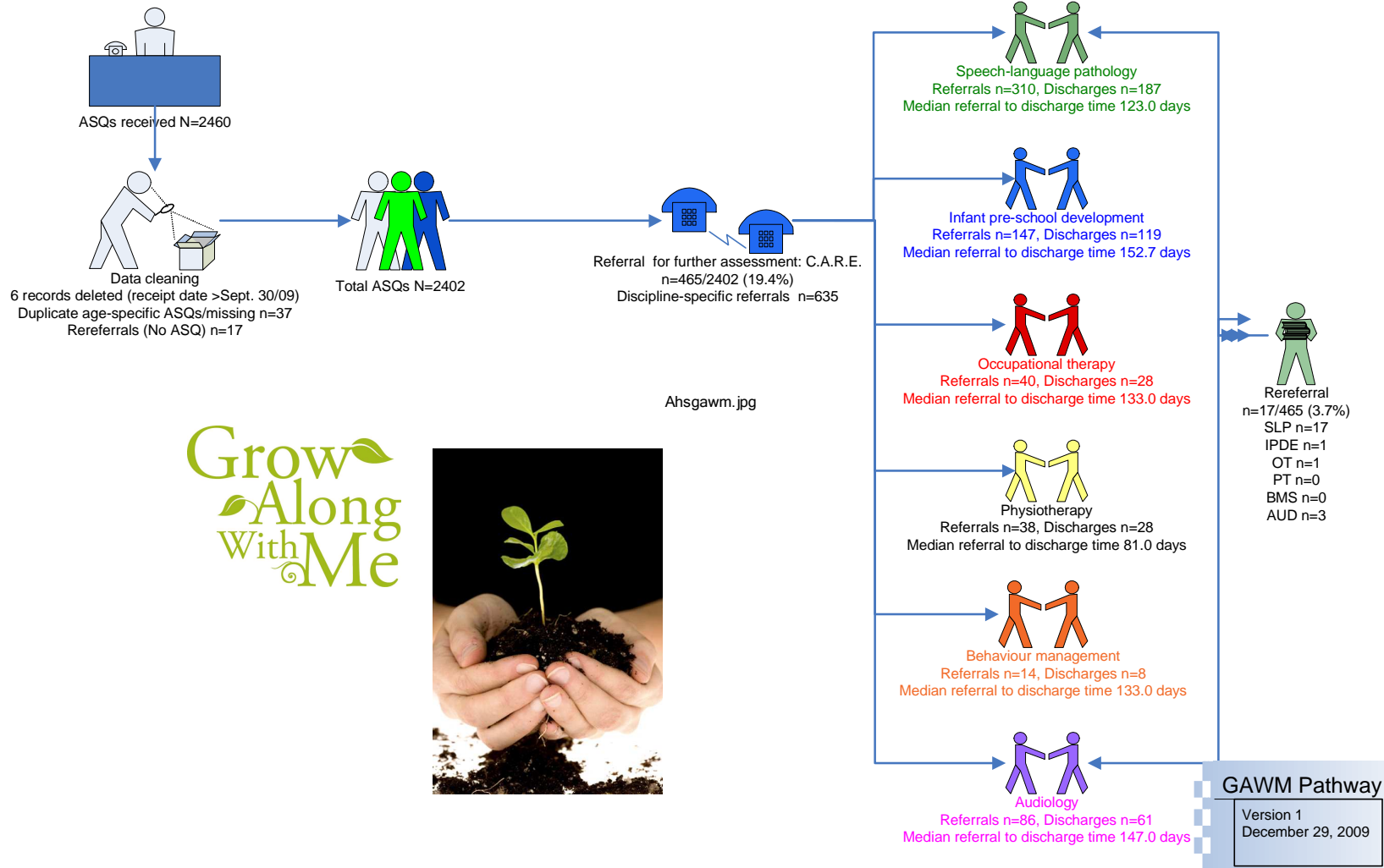
Rereferral

- 6.4% of children referred to Children’s C.A.R.E. services between January 2008 and September 2009 (as a result of completing the ASQ) *and discharged prior to September 2009* (n=17/264) were rereferred for services. Note: Based on discharge data available at Nov. 3, 2009, 43.2% of referred children (201/465) had not yet been discharged¹⁷. Referral rates as a proportion of children “flagged for further follow-up during the timeframe were 3.7%. A child may have received more than one discipline-specific referral during this timeframe and or may have received more than one referral due to differing age-specific ASQs completed. The ability to analyze child-specific data is limited in that unique identifiers were not collected for each child.
- Rereferrals were initiated for the following disciplines: SLP 100%, n=17/17, Audiology 17.6%, n=3/17, IPDE and OT 5.9%, n=1/17 each.
- A overview of the ASQ related activity can be found in the Figure 14 below:

¹⁷ Discipline-specific discharge

Grow Along with Me Client Pathway Audit

January 1, 2008 – Sept. 30, 2009



Grow
Along
With Me



Figure 14 Client Pathway Audit. Overview

Validity and Reliability

Audits of data validity and reliability were completed for 300 stratified randomly-selected charts of children whose ASQ was submitted to Children's C.A.R.E. in 2008-09. Kappa-Alpha reliability percentage error was 5.7% (17/300) incorrect transfer of data between questionnaire, summary sheet, and computerized database. The most concerning percentage of error (9%) was related to use of the incorrect age-specific ASQ (in relation to the child's age).

Details of the validity/reliability audit are available under separate cover (Thompson & Jensen-Ross, 2010).

Discussion

The Grow Along with Me Client pathway provides the opportunity to examine the movement of children from the initial developmental check-up through to treatment and discharge for children with identified delays. This exploratory pathway describes the current system and provides the opportunity to critically examine the service continuum - identifying what is working well, and opportunities for improvement, and defining standards of expected care, treatment, and tests to be carried out. Coney (1992) advises, "Thereafter, the various steps in the care process are reviewed to find ways to coordinate activities or to reduce the time required. Deviations in the care for the individual patient are documented in a variation schedule after which corrective actions are taken, if required. In the event of the care of the patient not proceeding as anticipated, information is fed back continuously to the ... staff and serves as a kind of education" (as cited in Walldal, Anund, & Furaker, 2002, p. 115). This evaluation provides baseline data that can be utilized in setting short term and long term goals and timelines. Long term goals, strategies and key elements of care are ideally based on best-available evidence, Evidence Based Medicine (EBM) guidelines, best practice and patient expectations (DeBleser, L. et al., 2006).

Process changes initiated in response to available evidence have resulted in revised, simpler processes. The number of steps to complete the intake process has been reduced. Consequently, intake wait times and total referral to discharge times have been reduced – the process has become more efficient. While wide variance in discipline-specific gateway interval/wait times is noted, there has been a reduction in variance over time. Clarification and standardization of processes, review of within-discipline outliers, and consistent use of validated tools would promote consistency in approaches, reduce variation, and enhance communication and comparability between service providers, organizations and families. Sequential monitoring of development over time (critical for the early identification of delays at this time of rapid developmental change) is beginning to take root.

Detailed flow process maps portraying desired system flow are under development and being piloted within small subsets of the population. Integral to future quality improvement initiatives are communication, coordinating roles, and sequencing the activities of the multidisciplinary care team, patients and their relatives. Documenting, monitoring and evaluating variances and continuously bringing this information back to the staff are foundational to informed decision-making and evidence-informed practice. Work to date holds promise for providing optimal services for children and families - services that are accessible, efficient, seamless and model best practice in early childhood development.

Limitations

Lack of clear indicator definitions prior to database development resulted in indicators being driven by the data versus being driven by information needs. Simultaneous data entry into the Meditech and the research database resulted in duplication, yet was necessitated by the limited ability to create timely reporting in the Meditech system. Due to data limitations, the ability to examine prematurity, and ASQ sensitivity and specificity is limited. Stratification of gateway interval/wait times by discipline may have been enhanced by creating measures to reflect a holistic multidisciplinary team approach. The ability to track outcomes associated with treatment interventions was limited to due lack of consistent discipline-specific outcome measures. Frequent process changes (often prompted by concurrent regional projects [e.g. the Primary Care Project]) may have resulted in changes being made prior to the definition of baseline measures and evaluation of the effectiveness of the current process. Comparison of findings across jurisdictions was limited to due to inconsistent data collection across projects.

- Findings for the 18-36 month population cannot be generalized to other age groups and may not be reflective of the entire population of children receiving ASQ checkups. For example, children residing in the two First Nations Reserves falling within the former Chinook Health Region boundaries were not included in this project; the population included in this study may not have included “hard to reach” (and potentially higher needs) families.

The high proportion of children not yet discharged at the completion of this study – important to continue to track over time to obtain comprehensive picture gateway interval/wait time information.

Recommendations

This pathway audit has provided the ability to discuss and clarify the current flow of children through the system and has provided the ability to identify misperceptions, inconsistencies and gaps. It is recommended that the Grow Along with Me Steering Committee:

1. Use this client pathway audit as the foundation upon which to develop a critical pathway (incorporating best practice, best-available evidence, and quality improvement principles):
 - a. Examine ways to eliminate unnecessary steps in the process and to minimize variation among service providers (where best practice evidence is available);
 - b. Develop a process to regularly review outlier cases;
 - c. Systematically review the quality of care along client pathways to analyze obstacles and deviations;
 - d. Use pathway baseline measures to set targets and timelines; and
 - e. Promote staff capacity to participate and design evaluative research in areas where data are lacking and where limited best practice knowledge is available.
2. Promote the availability of key indicators in a robust, responsive computer database:
 - a. Promote provincially harmonized data sets, definitions and indicators;
 - b. Define indicators useful for strategic planning (for system sustainability post project). Promote computer linkage within and between service providers and partners (e.g. ASQ results, documentation of decisions). Consider integration of birth and developmental information within a linked dataset;

- c. Explore opportunities to sustain the measurement of pathway indicators for comparison over time;
 - d. Promote adoption of ASQ version 3 to improve identified data collection issues (e.g. consistent use of age- specific ASQs); and
 - e. Refine collected data elements (e.g. prematurity, multidisciplinary gateway interval/wait times, treatment outcomes, referral patterns, and socio-economic health determinants).
3. Encourage consistent use of the ASQ (version 3) as an early identification tool. Reinforce the importance of parent comments in conjunction with ASQ domain flags when determining client and family follow-up.
4. Promote resource availability to support cost effective models of service delivery (e.g. the use of therapy assistants, parent-completed ASQs, community screening and screening blitzes);
5. Promote the value of the ASQ for parent educational and capacity building (prevention) in addition to its use as a flag for follow-up and treatment;
6. Continue to systematically incorporate evidence into strategic planning;
7. Consider segmenting the population of children into short term and long term subpopulations and planning service needs based on these population groups. For example, nearly $\frac{3}{4}$ of children were discharged from discipline-specific services prior to receiving treatment (range 59.7% - 85.7%).¹⁸ This may have implications for short-term service delivery options and/or group services. Consider the use of alternate service providers for treatment of long-term clients as an option for reducing service gateway interval/wait times and reducing duplication; and
8. Celebrate successes achieved to date.

¹⁸ Audiology (90.2%) excluded

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Appendix A

Goal	Objective	Indicators	Data Collection Method(s)	Evaluation Methodology	Data Collection Frequency
Goal #2: To develop a comprehensive continuum of services that provides the right level of service, at the right time, by the right person as near to the child's residence as possible.	2.1 To provide a child and their family timely screening and assessment services beginning October 2007.	<ul style="list-style-type: none"> • Age of child at time of referral/service type • # of delays on ASQ (by domain) in relation to total number of ASQs completed in designated cohort • # of children referred to S.T.A.R.T. Clinical Team • # of children referred to S.T.A.R.T. Articulation Team • # of children referred to urgent clinical services • # of parents who decline S.T.A.R.T. assessment (i.e. regular & articulation) • # of parents who decline clinical Assessment • Assessment wait times by service type • Treatment wait times by service type • # of children assessed/month/service type • # of children treated/month/service type • Total hours of assessment service/service type (S.T.A.R.T. or clinical) • Total hours of treatment service/service type (S.T.A.R.T. or clinical) • Discharge dates/service type • Discharge reason(s)/service type 	ASQ Demographics + GAIMM Referral Forms + GAIMM S.T.A.R.T. Team Assessment Form + C.A.R.E. Discharge Forms	Counts/% Data stratified by service type (i.e. S.T.A.R.T. Team, S.T.A.R.T. Articulation, or Clinical Intervention), agency, geography, ASQ level, etc.	Monthly
Goal #1	1.3 To adopt a consistent regional referral pathway across partnering service providers in relation to a positive screen for a developmental delay by December 31, 2009.	Referral patterns (i.e., # and type) by partner agencies for children who complete the ASQ.	Pathway Audit	Pathway Audit: data tracked & analyzed by service type (i.e., S.T.A.R.T. team or clinical services), by discipline, and by geography. We will also review wait time via Meditech reports; however, this data will be collected by GAIMM forms & entered into the Master Excel Spreadsheet.	Monthly

(Gregory, D. & Burka Charles, M., 2007)

Appendix B
Consent forms

- a) G.A.W.M. Research Project
- b) Children's C.A.R.E. Consent Form



Children's C.A.R.E. Services
 A252, 200 – 5th Avenue South
 Lethbridge, AB • T1J 4C7

I, _____ Parent Foster Parent Guardian Other _____
 (Print)

Consent to _____ receiving services from Children's C.A.R.E. Services
 (Child's Last Name / First Name)

Services may be provided by: Audiology
 Behaviour Management Specialists
 Infant Preschool Development
 Occupational Therapy
 Physiotherapy
 Speech-Language Pathology
 Family Services Coordinator

Services may include: Assessment
 Consultation
 Individual Intervention
 Group Intervention
 Parent Groups
 Family Support

Services may be provided in: Home
 School
 Preschool/Daycare/Nursery
 Community Health Site

 (Signature) _____
 (dd / mm / yy)

I also consent to written/verbal information regarding my child's C.A.R.E. Services program being released to and/or obtained, on a need-to-know basis, from:

School	Paediatrician	Psychiatrist
Preschool/Daycare/Nursery	Family Doctor	Southwest Child & Family Services
Alberta Children's Hospital	REACH	Other _____

 (Signature) _____
 (dd / mm / yy)

If you do not agree to any of these service options, please cross out the item(s) and initial

This consent will be used only for the service delivery and information-sharing listed above, in addition to statistical and program evaluation purposes. Further consent will be obtained if required. This personal information is protected by the Freedom of Information & Protection of Privacy Act (FOIPPA) and the Health Information Act (HIA).

I am aware of the risks and benefits of this information being disclosed. I understand that I may revoke this consent in writing at any time by contacting Children's C.A.R.E. Services at (403) 329-5255

 (Signature) _____
 (dd / mm / yy)

If you are not the parent, please attach appropriate documentation indicating your ability to consent for services.

Appendix C

Data cleaning & Coding Manual

Action	Rationale
Q3, 2008-09	
1. Duplicate records 1082, 1199 (18 mos ASQ) Deleted Record 1199, comments retained	Two surveys completed within 3 weeks of each other, one by Children's C.A.R.E., one by Wellness Services
2. Duplicate records 316, 429 (24 mos ASQ) Deleted record 429 comments retained	Both ASQs completed by Parents as Teachers staff within 3 weeks of each other
3. Duplicate records 1141, 1317 (36 mos. ASQ) Record 1317 deleted, comments retained	ASQ repeated 6 weeks later by Children's C.A.R.E.
4. Triplicate records 68, 366, 439 (18 mos. ASQ) Record 366, 439 deleted, comments combined and retained. Note: Scores from subsequent ASQs not transferred	ASQs completed by at community-based screening, wellness services and CH Home visitation (Raymond)
5. Duplicate records 1084, 535 (27 mos. ASQ) Deleted record 1084	Duplicate info Parent Link Centre x 2
6. Duplicate records 645, 655 Evans, Jayden (18 mos. ASQ) Deleted record 645	Duplicate records two different agencies PHNs & Home Visitation
7. Duplicate records 867, 1077 (18 mos. ASQ) Deleted record 867	Duplicate records completed by Wellness Services and CH Home Visitation within 6 weeks of each other
8. Duplicate records 11 & 603 (24 mos. ASQ) Deleted record 603	Completed by PAT and Children's C.A.R.E.
9. Duplicate records 157 & 158 (20 mos. ASQ) Deleted 158	Duplicate info. C.A.R.E. x 2
10. Duplicate Records 682, 786 (24 month ASQ). Deleted 786. Changed other from "9999" to "1" as other concerns mentioned.	Duplicates completed within 7 days Wellness, Parents as Teachers
11. Duplicate records 12, 269 Deleted record #12	Duplicates Wellness, Community-based screening

Action	Rationale
12. Duplicate records 947, 1184 (18 mos. ASQ) Deleted #1184	Duplicates Wellness, Home Visitation completed within 2 weeks of each other.
13. Duplicates 270, 442 (18 mos. ASQ) Deleted 270	Duplicates Wellness, Home Visitation within 3 weeks of each other.
14. Duplicates 309, 532 (22 mos. ASQ) Deleted 309	Duplicates, Wellness, C.A.R.E. services . C.A.R.E. ASQ completed 2 weeks shy of 24 mos ASQ.
15. Duplicates 1123, 1364 (8 mos ASQ) Delete 1364	Duplicates 2 mos apart, 18 mos completed for both. Parent Link & Wellness Services
16. Duplicates 611, 444 Deleted 444	Duplicates community based screening, Home Visitation
Q4, 2008-09	
17. Duplicates 1411, 1661 (22 mos. ASQ) Deleted 1661	Duplicate Wellness Services x 2
18. Duplicates 1420, 1602 Deleted 1420	Duplicates Wellness Services, Community Based Screening (2 weeks apart)
19. Duplicates 1160, 1533 (18 mos ASQ) Deleted 1533	Duplicate Wellness Services x 2
20. Duplicates 864, 674 Deleted 864	Duplicates Home Visitation, Wellness Services (3 days apart)
21. Duplicates 1417, 1435 (20 mos. ASQ) Delete 1417	Duplicates Parent Link Centre, Wellness Services
22. Duplicates 207, 512 (33 mos. ASQ) Deleted 207	Duplicates Children's C.A.R.E. Services x2
23. Duplicates 6, 7 Deleted #7	<u>Data entry error #7</u> – record eliminated
24. Duplicates 1346, 1541 (18 mos. ASQ) Deleted 1541	Duplicates Parent, Link, Wellness Services
25. Duplicates 1410, 1538 (20 mos. ASQ) Deleted 1538	Duplicates Wellness Services x2
26. Duplicates 1437, 1564 Deleted 1564	Duplicates Parent Link, Community-based screening
27. Duplicates 35, 1662 (18 mos. ASQ) Deleted 1662	Duplicates Children's C.A.R.E. & 9999 – 9999 file contained no data

Action	Rationale
28. Duplicates 1136, 1605 (36 mos. ASQ) Deleted 1605	Duplicates Parent Link Centre, Community-based screening
Q1 2009-10	
29. Duplicates 1894, 2014 (36 mos. ASQ) Deleted 1894	Administering agency Community-based screening & Home visitation
30. Duplicates 1276, 1916 (36 mos) Deleted 1916	Administering agencies Parents as Teachers x2
31. Duplicates 2010, 2120 Delete 2120	Administering Agencies Home Visitation & Wellness Services
32. 1831, 1988 (18 mos) Delete 1988	Administered by Wellness Services x 2
33. 1990, 2171 (24 mos) Deleted 2171 (1990 referral initiated)	Administering agencies Wellness Services & C.A.R.E.
Q2 2009-10	
34. Duplicates 1779, 2231 Deleted 2231 (Referral initiated 1779)	Administering agencies Wellness Services and Children's C.A.R.E. services (within 1 week)
35. Duplicates 2249, 2327 (18 mos) Deleted 2327	Administering agency Wellness Services x2 (within 2 weeks)
36. Duplicates 2275, 2421 (18 mos) Delete 2275 (Comments retained)	Administering agency Wellness Services x2

Coding decisions

1. When two surveys completed for the same child, same age group. If **referral initiated**, keep the ASQ that triggered the referral. If not, retain the ASQ that most closely matches the child's age (or adjusted age) at time of completion. Retain parent comments from both surveys.

Appendix D
Client pathway Indicators (Discipline-specific) – April 2, 2009

Indicator	Definition	MediTech Data Fields	GAWM Data Base Fields	Comments/Limitations
Intake	Time from the discipline specific request to the time forms complete	DSFC - DSSR	<u>DSFC</u> = ISC Discharge Status Date (dd/mm/yyyy) (Date is the same whether a child is deemed START or clinical) <u>DSSR</u> = If a child receives a START (SLP & IPD) or a START phonology (SLP) assessment (Date of START Ax is not = 999) then the DSSR for the specified disciplines is the original referral date (Referral Date). The DSSR = the discipline referral date.	The value may be negative if an additional discipline is deemed appropriate at a later date than the original referral date. Due to non update of the ISC discharge Status Date. Will be unavailable for Audiology due to non entry of DSFC order.
Intake to Assessment	Time from Forms Complete to Date of Assessment	AX – DSFC		Not available due to non update of the ISC Discharge Status Date. Anne will add discipline specific forms complete field for each discipline. Note: This will simplify intake indicator calculation. May want to consider DSSR to AX for Audiology

Indicator	Definition	MediTech Data Fields	GAWM Data Base Fields	Comments/Limitations
Assessment Complete to Treatment Initiated Wait for Treatment	Time from assessment complete to treatment initiation	TX or treatment related field – AX the last assessment documented by the clinician	Proxy indicators are; 1. Date of (discipline) assessment to the Date of the first (discipline) treatment 2. # of minutes of (discipline) Tx provided including Ax (mean, median, mode, range SD)	Not applicable for Audiology
Treatment Initiation to Discipline Specific Discharge		TX or treatment related filed = DISCD	Date of 1 st (discipline) Tx to the Date of (discipline) D/C	Not discussed at 06/03/09 meeting Not available for Audiology
Discipline specific referral date to the discipline specific discharge date		DSSR to DISCD	Date of (discipline) referral to Date of (discipline) D/C	Not discussed at 06/03/09 meeting Available for Audiology
Discharge Reasons		Comments included with DISCD order	(Discipline) D/C Reason	May need to clarify definitions of fields with staff (Cluster by discharge point)
Point of Discharge		Comments included with DISCD order	(Discipline) D/C Point	

Appendix E

Gateway interval/wait Time Indicator Definitions

Intake Wait Time

BALANCED SCORE CARD SECTION: Best Access

QUALITY DIMENSION: Efficiency

QUALITY DESCRIPTOR:

Days from discipline-specific referral to discipline-specific forms completed

DSFC = Discipline-specific forms complete

Note: Dated that forms are complete (DSFC) = Intake coordinator discharge date

DSSR = Discipline-specific referral date

DEFINITION:

1. Average (median, mode) wait time from discipline-specific service request forms complete to discipline-specific forms completed.

Numerator:

Total wait time

Denominator:

of children whose date of discipline-specific forms complete occurred in the quarter reported.

Exclusions:

Children whose forms are not complete. Audiology intake wait times not available.

Limitations:

TYPE : Process

SIGNIFICANCE OF INDICATOR:

Vision 2020 goals include:

1. Providing the right service, in the right place and at the right time;
2. Enhancing access to high quality services in rural area; and,
3. Improving co-ordination and delivery of care.

Anecdotal reports indicate that wait times for services frequently exceed 1 year.

REPORTING PERIOD:

Quarterly

REFERENCES:

Alberta Health Services. (2008). Vision 2020. Edmonton, Alberta; Author

SOURCE DATA:

GAWM Master Spreadsheet

TARGET: Baseline

Wait Time: Intake to Assessment

BALANCED SCORE CARD SECTION: Best Access

QUALITY DIMENSION: Efficiency

QUALITY DESCRIPTOR:

Days from discipline-specific form complete to first (discipline-specific) assessment

DSFC = Discipline-specific forms complete

Ax = Discipline-specific referral date

START AX = START Team assessment

DEFINITION:

1. Average (median, mode) wait time from discipline-specific service forms complete to first discipline-specific assessment.

Numerator: Total wait time

Denominator: Children whose first discipline-specific assessment occurred within the quarter.

Exclusions: Children where forms were not complete. Children not yet discharged. Children who had not been assessed during the timeframe of interest.

Limitations:

Intake coordinator discharge date CANNOT be used as DSFC date, as it is not updated with subsequent referral requests.

Note:

Audiology proxy measure: Discipline-specific service request to first Audiology Assessment

Grouping:

Group by referral stream:

START Assessment;

Clinical Assessment;

START Sound; and,

Urgent.

TYPE : Process

SIGNIFICANCE OF INDICATOR:

Vision 2020 goals include:

- Providing the right service, in the right place and at the right time;
- Enhancing access to high quality services in rural area; and,
- Improving co-ordination and delivery of care.

Anecdotal reports indicate that wait times for services frequently exceed 1 year.

REPORTING PERIOD: Quarterly

REFERENCES:

Alberta Health Services. (2008). Vision 2020. Edmonton, Alberta; Author

SOURCE DATA:

GAWM Master Spreadsheet

TARGET: Baseline

Wait for Treatment

Proxy Indicators: Average assessment/treatment time

BALANCED SCORE CARD SECTION: Best Access

QUALITY DIMENSION: Efficiency

QUALITY DESCRIPTOR:

Days from (discipline-specific) initiation of assessment to initiation of treatment

Ax = Date of first assessment (discipline-specific & START)

Tx = Date of first treatment (clinical services)

Date of START Follow-up = Date of first START treatment

DEFINITION:

1. Average (median, mode) time from date of first discipline-specific assessment to first discipline-specific treatment

Numerator: Total gateway interval/wait time

Denominator: Children receiving first discipline-specific treatment within the quarter reported.

Grouping:

a) Group by treatment group:

Discipline-specific treatment (individual)

Clinical treatment group

START Follow-up Team

b) Group by Type of Assessment (START, START Speech Sound, Clinical and Urgent) and by Type of Treatment for each assessment group (e.g. START assessment to treatment group 1-3 [see a]).

Exclusions: Children where forms were not complete. Children who had not received treatment (e.g. no treatment date) during the timeframe of interest.

Limitations: Assessment complete not a tracked variable in GAWM Master spreadsheet.

2. Average assessment/treatment time

Numerator: Total assessment/treatment time (by discipline)

Denominator: Children receiving first discipline-specific treatment within the quarter reported.

Grouping:

Group by treatment group:

Discipline-specific treatment (individual)

Clinical treatment group

START Follow-up Team

Exclusions: Children where forms were not complete.

Limitations:

Assessment complete not a tracked variable in GAWM Master spreadsheet.

TYPE : Process

SIGNIFICANCE OF INDICATOR:

Vision 2020 goals include:

- Providing the right service, in the right place and at the right time;
- Enhancing access to high quality services in rural area; and,
- Improving co-ordination and delivery of care.

Anecdotal reports indicate that gateway interval/wait times for services frequently exceed 1 year

REPORTING PERIOD:

Quarterly

REFERENCES:

Alberta Health Services. (2008). Vision 2020. Edmonton, Alberta; Author

SOURCE DATA:

GAWM Master Spreadsheet

TARGET: Baseline

Time: Discipline-specific Treatment to Discipline-specific Discharge

BALANCED SCORE CARD SECTION: Best Access

QUALITY DIMENSION: Efficiency

QUALITY DESCRIPTOR:

Days from discipline-specific treatment to discipline-specific discharge.

Tx = Discipline-specific treatment initiated

Discipline-specific Discharge date

DEFINITION:

1. Average (median, mode) time from first (discipline-specific) treatment to discipline-specific discharge.

Numerator: Total gateway interval/wait time

Denominator: Children discharged from each discipline within the quarter.

Exclusions: Children where forms were not complete. Children who have not yet discharged by the discipline of interest.

Limitations:

TYPE : Process

SIGNIFICANCE OF INDICATOR:

Vision 2020 goals include:

- Providing the right service, in the right place and at the right time;
- Enhancing access to high quality services in rural area; and,
- Improving co-ordination and delivery of care.

Anecdotal reports indicate that gateway interval/wait times for services frequently exceed 1 year.

REPORTING PERIOD:

Quarterly

REFERENCES:

Alberta Health Services. (2008). Vision 2020. Edmonton, Alberta; Author

SOURCE DATA:

GAWM Master Spreadsheet

TARGET: Baseline

Discipline-specific Referral to Discipline-specific Discharge

BALANCED SCORE CARD SECTION: Best Access

QUALITY DIMENSION: Efficiency

QUALITY DESCRIPTOR:

Days from discipline-specific referral to discipline-specific discharge.

Date of discipline-referral

Discipline-specific Discharge date

DEFINITION:

1. Average (median, mode) time from discipline-specific referral to discipline-specific discharge.

Numerator: Total gateway interval/wait time

Denominator: Children discharged from each discipline within the quarter.

Exclusions: Children where forms were not complete. Children not yet discharged from the discipline of interest.

Limitations: Audiology discharge dates not available in dataset.

TYPE : Process

SIGNIFICANCE OF INDICATOR:

Vision 2020 goals include:

- Providing the right service, in the right place and at the right time;
- Enhancing access to high quality services in rural area; and,
- Improving co-ordination and delivery of care.

Anecdotal reports indicate that gateway interval/wait times for services frequently exceed 1 year.

REPORTING PERIOD:

Quarterly

REFERENCES:

Alberta Health Services. (2008). Vision 2020. Edmonton, Alberta; Author

SOURCE DATA:

GAWM Master Spreadsheet

TARGET: Baseline

Appendix F

Data Dictionary: Grow Along with Me Project

Apr09GOLDGAWMMasterAll Excel Database & SPSS Database

* SPSS calculated fields

Data Field	Description	Source	Coding	Comments
Assigned Number	Arbitrarily assigned project number			
Referred	Referred to Children's C.A.R.E. as a result of ASQ	ASQ Form		
LastName	Legal last name as	ASQ form, verified in Meditech	String variable	
FirstName	Legal first name	ASQ form, verified in Meditech	String variable	
Gender	Gender of child	ASQ form, verified in Meditech	1= Male 2= Female	
DOB	Date of birth (child)	ASQ form, verified in Meditech	dd.mm.yyyy	
DateASQComplete	Date ASQ completed by parents	ASQ form	dd.mm.yyyy	Recode "999" on transfer to SPSS to system missing.
DATEASQReceived	Date ASQ received by C.A.R.E.	Date	dd.mm.yyyy	

Data Field	Description	Source	Coding	Comments
	(Date Stamp on arrival)	stamp		
Completedby	Name of person who completed the ASQ	ASQ form	String variable 9999=Missing	
Relationship	Relationship to child (person who completed the form)	ASQ form	String variable 9999=Missing	
PhoneNumber	Phone number of person completing the ASQ	ASQ form	xxx-xxx-xxxx String variable	
MailingAddress	Mailing address of person completing ASQ/child	ASQ form	String variable	
CityTown	City or town of child/person completing ASQ	ASQ form	String variable	
Prov	Province of the child/person completing ASQ	ASQ form	Province AB= Alberta	
Postal	First 3 digits of postal code of person completing ASQ	ASQ form	Alphanumeric, numeric, alphanumeric, e.g. T1K	
Code	Last 3 digits of postal code of person completing ASQ		Numeric, alphanumeric, numeric e.g. 5B9	
AdministerAg	Agency who scored the ASQ. Note: If no tabulated score, considered administered by C.A.R.E.	ASQ form	1 = Baby follow-up 2 = Community-based screening 3 = Children's C.A.R.E. services 4 = CH Home Visitation 5 = Daycare/ Dayhome 6 = Parents as Teachers 7 = Parent Link Centre 8 = Wellness Services 9 = Other 9999=Not Applicable	
ConsentEval	Approval for use of ASQ for evaluation purposes	GAWM Project Consent form*	1 = Yes 0 = No 9999 = Missing	

Data Field	Description	Source	Coding	Comments
ConsentTeleInt	Agree to be contacted by U of L for interview	GAWM Project Consent form*	1 = Yes 0 = No 9999 = Missing/Not applicable	
ASQLevel	Age-specific ASQ	ASQ	18 = 18 mos ASQ 22 = 22 mos ASQ 24 = 24 mos ASQ 27 = 27 mos ASQ 30 = 30 mos ASQ 33 = 33 mos ASQ 36 = 36 mos ASQ 999=Not Applicable	Target: Parent will completed at least 2 ASQs over the 18-36 mos timeframe
Hears	ASQ OVERALL Q#1 Hears well?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
ComHear	Comment ASQ Q1	ASQ Info Summary	String variable	
Talks	ASQ OVERALL Q#2 Talks like other toddlers?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
ComTalk	Comment ASQ Q2 Talks like other toddlers?	ASQ Info Summary	String variable	
Understand	ASQ OVERALL Q#3 Understand child?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
ComUnder	Comment ASQ Q3 Understand child?	ASQ Info Summary	String variable	
Walks	ASQ OVERALL Q#4 Walks, runs, and climbs like	ASQ Info Summary	1 = Yes 0 = No	

Data Field	Description	Source	Coding	Comments
	others?		9999 = Missing/Not applicable	
ComWalk	Comment ASQ Q4 Walks, runs, and climbs like others?	ASQ Info Summary	String variable	
FamHxHI	ASQ OVERALL Q#5 Family history of hearing impairment?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
ComFHxHI	Comment ASQ Q5 Q#5 Family history of hearing impairment?	ASQ Info Summary	String variable	
Visionconcerns	ASQ OVERALL Q#6 Vision concerns?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
ComVis	Comment ASQ Q6 Vision concerns?	ASQ Info Summary	String variable	
Recentmedical	ASQ OVERALL Q#7 Recent medical problems?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
Comments_A	Comment ASQ Q7 Recent medical problems?	ASQ Info Summary	String	
Other	ASQ OVERALL Q#8 Does anything bout your child worry you?	ASQ Info Summary	1 = Yes 0 = No 9999 = Missing/Not applicable	
Comments	Comment ASQ Q8 Does anything bout your child worry you?	ASQ Info Summary	String	
Communication	Communication score Communication Q1-6 ratio level score	ASQ Info Summary	Calculated total score from all 6 questions (possible score of 60) 999=Not Applicable	To calculate ratio level score for each area: If Yes = 10 If Sometimes = 5 If not yet = 0 If <= 2 questions missed, average of remainder of
ComDel*	Communication Delay	QRS Risk Indicators by Score	0= No delay 1= Mild-moderate delay 2= Severe delay	
Grossmotor	Gross motor score	ASQ Info	Calculated total score from all 6	

Data Field	Description	Source	Coding	Comments	
	Gross motor ratio level score	Summary	questions (possible score of 60) 9999=Not Applicable	category questions used. If >2 questions missed, code 99 Ratio scores are computed by dividing the area's total points by the number of items answered (result will be 0-10). Ratio level for each score for each area is added to determine final area score (not included in Master Spreadsheet at this time) Note: cutoff scores (>2 SD of mean) differ by age group. * In SPSS database only	
GrosDel *	Gross motor delay	QRS Risk Indicators by Score	0= No delay 1= Mild-moderate delay 2= Severe delay		
Finemotor	Fine motor score Fine motor ratio level score	ASQ Info Summary	Calculated total score from all 6 questions (possible score of 60) 9999=Not Applicable		
FinMotDel*	Fine Motor Delay	QRS Risk Indicators by Score	0= No delay 1= Mild-moderate delay 2= Severe delay		
Problemsolving	Problem solving score Problem solving ratio level score	ASQ Info Summary	Calculated total score from all 6 questions (possible score of 60) 9999=Not Applicable		
ProSolDel*	Problem solving delay	QRS Risk Indicators by Score	0= No delay 1= Mild-moderate delay 2= Severe delay		
Personalsocial	Personal/social score Person/social ratio score	ASQ Info Summary	Calculated total score from all 6 questions (possible score of 60) 9999=Not Applicable		
PSDel *	Personal/social delay	QRS Risk Indicators by Score	0= No delay 1= Mild-moderate delay 2= Severe delay		
ReferralMade	Referral made to Children's C.A.R.E. services. Possible referral sources are; PHN, Pediatrician, Family Physician, Self (Parent), Chinook Health Home Visitation, Parents as Teachers, Parent Link Centre, Chinook Regional, Alberta Children's Hospital, Pre-School, Day Care	Referral for Service Form	1 = Yes 0 = No 3 = Already a C.A.R.E. client 4 = Urgent 5 = Re-Referral after receiving services (Internal discipline specific referral)		Referral source may differ from administering agency of ASQ as the parent may or may not complete the questionnaire prior to the referral being made.

Data Field	Description	Source	Coding	Comments
PTrequest	Request for PT services at referral (Note: Does not mean that discipline referral was completed)	Referral for Service Form	1 = Yes 0 = No	This is filled in by the person making the referral. The child may or may not receive services from the disciplines indicated. (Common Error is to refer to Physiotherapy when the child should be referred to Occupational Therapy and vice versa) Once the START team or ISC reviews the file the discipline(s) that the child is assigned to be assessed by is decided.
AUDrequest	Request for AUD services at referral (Note: Does not mean that discipline referral was completed)	Referral for Service Form	1 = Yes 0 = No	
Babyrequest		Referral for Service Form	1 = Yes 0 = No	Note: field no longer active. Baby Team referrals are not appropriate for 18-36 mos age group.
OTrequest	Request for OT services at referral (Note: Does not mean that discipline referral was completed)	Referral for Service Form	1 = Yes 0 = No	
IPDrequest	Request for Infant Preschool Development Services at referral (Note: Does not mean that discipline referral was completed)	Referral for Service Form	1 = Yes 0 = No	

Data Field	Description	Source	Coding	Comments
Feedrequest		Referral for Service Form	1 = Yes 0 = No	Field inactivated Oct 2008. Code SLPreq = yes, IPDreq = yes
SLPrequest	Request for SLP services at referral (Note: Does not mean that discipline referral was completed)	Referral for Service Form	1 = Yes 0 = No	
BMSrequest	Request for Behaviour Management Services at referral (Note: Does not mean that discipline referral was completed)	Referral for Service Form	1 = Yes 0 = No	
Unsurerequest	Discipline specific request unclear/not determined at time of referral	Referral for Service Form	1 = Yes 0 = No	
Referraldate	Date referral received by C.A.R.E. (Stamp)	Referral for Service Form	dd.mm.yyyy	Mail stamped with receipt date
Age@ReferralMos	Age of child at time of referral to C.A.R.E. (months)	Meditech	Numeric 9999= Missing/Not applicable	
RefComplete	Referral package complete e.g. 1. Referral for Services 2. Case History 3. Consent for Service (C.A.R.E.) 4. ASQ (including consent for evaluation)		1 = Yes 0 = No 9999 = Missing/Not applicable	This indicates whether or not all necessary documentation was sent into the C.A.R.E. office at the time the referral was made.

Data Field	Description	Source	Coding	Comments
ISC_DCDate	Date of file review (by START team or ISC)	18 – 36 Month Referral Data Sheet	dd.mm.yyyy	Typically done each Friday (Oct 2008)
STARTAx	START team recommendation for assessment type after file review	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Missing/Not Applicable	Child is assigned to Speech Language Pathology & Infant Preschool Development. Criteria: <ul style="list-style-type: none"> • If >2 standard deviations from mean – START team • If >3 SD Clinical assessment
ClinicalAx	START team recommendation for assessment type after file review	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Missing/Not Applicable	Child is assigned (placed on waitlist for assessment) to the disciplines indicated on the 18-36 Month Referral Data Sheet
STARTSoundAx	START team recommendation for assessment type after file review	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	Child is only assigned to Speech Language Pathology
Urgent	START team recommendation for assessment type after file review	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	Child is assigned directly onto a clinician(s) waiting assessment list for the disciplines decided after the file is reviewed.
START Team Assessment				
DateSTARTAx	Date of START assessment	18 – 36 Month Referral	dd.mm.yyyy	Note: Family Centre field merged into PLC Oct 2008 9999 = Not Applicable - will be

Data Field	Description	Source	Coding	Comments
		Data Sheet, verified in Meditech		used if child does not attend a START Assessment (exception: date fields will be left blank)
SFUGroup	START Team Recommends that child attends START follow-up group	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
SFUInd	START Team Recommends that child receive individual START treatment	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
CSGroup	START Team recommends that child attends one of the Clinical Groups offered by C.A.R.E. (i.e. Ready Set Go)	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
CSInd	START Team recommends that child is placed on the waitlist to receive individual clinical treatment by one of C.A.R.E.'s clinicians	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 999=Not Applicable	
RefDiscAx	START Team recommends that child be placed on waitlist to be assessed by a discipline other than Speech Language Pathology & Infant Preschool Development (i.e. Physiotherapy)	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
ParentGroup	START Team recommends that parent/guardian attends one of the Core	18 – 36 Month	1 = Yes 0 = No	

Data Field	Description	Source	Coding	Comments
	GAWM parent education groups (i.e. COPE)	Referral Data Sheet	9999=Not Applicable	
PAT	START Team recommends that parent/guardian contact Parents as Teachers for services (Provides parent/guardian with information at Post Assessment Meeting)	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
PLC	START Team recommends that parent/guardian contact one of the Parent Link Centres for services (Provides parent/guardian with information at Post Assessment Meeting)	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
OtherCommun	START Team recommends that parent/guardian contact other community services (i.e. Library) (Provides parent/guardian with information at Post Assessment Meeting)	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 999=Not Applicable	
HomeProgram	START Team Recommends that parent/guardian follow a Home program/activities (Provided at Post Assessment Meeting)	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
FollowUpASQ	START Team recommends that parent/guardian completes an ASQ at a future date to check on child's progress	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No 9999=Not Applicable	
UrgentClinicalTx	START Team recommends that child receives Urgent Clinical Treatment or	18 – 36 Month	1 = Yes 0 = No	

Data Field	Description	Source	Coding	Comments
	Assessment if other discipline than Speech Language Pathology or Infant Preschool Development	Referral Data Sheet	9999=Not Applicable	
AssignSLP	Child assigned to Speech Language Pathology for assessment	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No	
DateSLPRef	Date that child was referred to Speech Language Pathology	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DATESLPDSFC	Discipline-specific forms complete date		dd.mm.yyyy	
DateSLPax	Date that a Speech Language Pathology assessment was initiated	Meditech	dd.mm.yyyy	Blank cell (date field) = Not applicable – will be used when a child does not receive an assessment. (Possible reasons could be parent declines, unable to contact parent to arrange assessment date)
Date1stSLPTx	Date of the first Speech Language Pathology treatment received	Meditech	dd.mm.yyyy	
MinSLPaxT	Total number of minutes of Speech Language Pathology service provided	Meditech	Numeric (Minutes)	
DateSLPDC	Date of discharge from Speech Language Pathology	Meditech	ddmmyyyy	
SLPDCReason	Discharge reason for Speech Language	Meditech	1 = Failure to complete forms	

Data Field	Description	Source	Coding	Comments
	Pathology		2 = Goals achieved 3 = Two consecutive no-shows 4 = Parent declined intervention 5 = Re-referral 6 = Skills age appropriate 7 = Services not required 8 = Unable to contact 9 = Receiving Alternate Services 10 = Moved 9999= Missing/Not Applicable	
SLPDCPoint	Discharge point from Speech Language Pathology	Meditech	1 = After initial assessment/screen 2 = After intake/referral 3 = After intervention 9999=Not Applicable	
AssignIPD	Child was assigned to Infant Preschool Development for assessment	18 – 36 Month Referral Data Sheet	1 = Yes 0 = No	
DateIPDRef	Date that child was referred to Infant Preschool Development	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DateIPDDSFC	IPD (Discipline-specific) forms complete date		dd.mm.yyyy	
DateIPDAx	Date that an Infant Preschool Development assessment was initiated	Meditech	dd.mm.yyyy	Blank cell (date field) = Not applicable – will be used when

Data Field	Description	Source	Coding	Comments
				a child does not receive an assessment. (Possible reasons could be parent declines, unable to contact parent to arrange assessment date)
Date1stIPDTx	Date of the first Infant Preschool Development treatment received	Meditech	dd.mm.yyyy	
MinIPDAxTx	Total number of minutes of Infant Preschool Development service provided (assessment & treatment)	Meditech	Numeric (Minutes)	
DateIPDDC	Date of discharge from Infant Preschool Development	Meditech	dd.mm.yyyy	
IPDDCReason	Discharge reason for Infant Preschool Development	Meditech	1 = Failure to complete forms 2 = Goals achieved 3 = Two consecutive no-shows 4 = Parent declined intervention 5 = Re-referral 6 = Skills age appropriate 7 = Services not required 8 = Unable to contact 9 = Receiving Alternate Services 10 = Moved 9999=Missing/Not Applicable	
IPDDCPoint	Discharge point from Infant Preschool Development	Meditech	1 = After initial assessment/screen 2 = After intake/referral 3 = After intervention 999=Not Applicable	
AssignOT	Child was assigned to Occupational Therapy for assessment	Referral for	1 = Yes 0 = No	This date may differ for the original referral date depending

Data Field	Description	Source	Coding	Comments
		Service form, 18-36 Month Referral Data Sheet		on at which stage the child was referred to the discipline.
DateOTRef	Date that child was referred Occupational Therapy	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DateOTDSFC	Date discipline-specific (OT) forms complete		dd.mm.yyyy	
DateOTAx	Date that an Occupational Therapy assessment was initiated	Meditech	dd.mm.yyyy	Blank cell (date field)= Not applicable – will be used when a child does not receive an assessment. (Possible reasons could be parent declines, unable to contact parent to arrange assessment date)
Date1stOTTx	Date of the first Occupational Therapy treatment received	Meditech	dd.mm.yyyy	
MinOTAxTx	Total number of minutes of Occupational Therapy service provided	Meditech	Numeric (Minutes)	
DateOTDC	Date of discharge from Occupational Therapy	Meditech	dd.mm.yyyy	
OTDCReason	Discharge reason for Occupational Therapy	Meditech	1 = Failure to complete forms 2 = Goals achieved 3 = Two consecutive no-shows	

Data Field	Description	Source	Coding	Comments
			4 = Parent declined intervention 5 = Re-referral 6 = Skills age appropriate 7 = Services not required 8 = Unable to contact 9 = Receiving Alternate Services 10 = Moved 9999=Missing/Not Applicable	
OTDCPoint	Discharge point from Occupational Therapy	Meditech	1 = After initial assessment/screen 2 = After intake/referral 3 = After intervention 9999=Not Applicable	
AssignedPT	Child was assigned to Physiotherapy for assessment	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DatePTRef	Date that child was referred Physiotherapy	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DatePTDSFC	Date of (discipline-specific) PT forms complete	Meditech	dd.mm.yyyy	

Data Field	Description	Source	Coding	Comments
DatePTAx	Date that a Physiotherapy assessment was initiated.	Meditech	dd.mm.yyyy	Blank cell (date field)= Not applicable – will be used when a child does not receive an assessment. (Possible reasons could be parent declines, unable to contact parent to arrange assessment date)
Date1stPTTx	Date of the first Physiotherapy treatment received	Meditech	dd.mm.yyyy	
MinPTAxTx	Total minutes of Physiotherapy service (assessment & treatment) provided	Meditech	Numeric (Minutes)	
DatePTDC	Date of discharge from Physiotherapy	Meditech	dd.mm.yyyy	
PTDCReason	Discharge reason for Physiotherapy	Meditech	1 = Failure to complete forms 2 = Goals achieved 3 = Two consecutive no-shows 4 = Parent declined intervention 5 = Re-referral 6 = Skills age appropriate 7 = Services not required 8 = Unable to contact 9 = Receiving Alternate Services 10 = Moved 9999=Missing/Not Applicable	
PTDCPoint	Discharge point from Physiotherapy	Meditech	1 = After initial assessment/screen 2 = After intake/referral 3 = After intervention 9999=Not Applicable	
AssignBMS	Child assigned to Behavior Management for assessment	Referral for Service form, 18-	1 = Yes 0 = No	

Data Field	Description	Source	Coding	Comments
		36 Month Referral Data Sheet		
DateBMSRef	Date that child was referred Behavior Management Services	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	
DateBMSDFSFC	Date of (discipline-specific) BMS forms complete	Meditech	dd.mm.yyyy	
DateBMSAx	Date that a Behavior Management Services (BMS) assessment was initiated.	Meditech	dd.mm.yyyy	
Date1stBMSTx	Date of the first Behavior Management Services treatment received	Meditech	dd.mm.yyyy	
MinBMSAxTx	Total number of minutes of BMS service (assessment & treatment) provided	Meditech	Numeric (Minutes)	
DateBMSDC	Date of discharge from BMS	Meditech	dd.mm.yyyy	
BMSDCReason	Discharge reason for BMS	Meditech	1 = Failure to complete forms 2 = Goals achieved 3 = Two consecutive no-shows 4 = Parent declined intervention 5 = Re-referral 6 = Skills age appropriate 7 = Services not required 8 = Unable to contact	

Data Field	Description	Source	Coding	Comments
			9 = Receiving Alternate Services 10 = Moved 9999=Missing/Not Applicable	
BMSDCPoint	Discharge point from BMS	Meditech	1 = After initial assessment/screen 2 = After intake/referral 3 = After intervention 9999=Not Applicable	
AssignedAUD	Child was assigned to Audiology for assessment	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	Note: Fields: Forms Complete and Date of 1 st Treatment not available for audiology This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DateAUDReferral	Date that child was referred to Audiology	Referral for Service form, 18-36 Month Referral Data Sheet	dd.mm.yyyy	This date may differ for the original referral date depending on at which stage the child was referred to the discipline.
DateAUDAx	Date that an Audiology assessment was initiated.	Meditech	dd.mm.yyyy	Blank cell (date field)= Not applicable – will be used when a child does not receive an assessment. (Possible reasons could be parent declines, unable to contact parent to arrange assessment date)

Data Field	Description	Source	Coding	Comments
				Note: Disciple-specific forms complete, date of first treatment not available for audiology.
MinAUDAxTx	Total number of minutes of Audiology service provided (assessment & treatment)	Meditech	Numeric (Minutes)	
DateAUDDC	Date of discharge from Audiology	Meditech	dd.mm.yyyy	
AUDDCReason	Discharge reason for Audiology	Meditech	1 = Failure to complete forms 2 = Goals achieved 3 = Two consecutive no-shows 4 = Parent declined intervention 5 = Re-referral 6 = Skills age appropriate 7 = Services not required 8 = Unable to contact 9 = Receiving Alternate Services 10 = Moved 9999=Missing/Not Applicable	
AUDDCPoint	Discharge point from Audiology	Meditech	1 = After initial assessment/screen 2 = After intake/referral 3 = After intervention 999=Not Applicable	
U of L	Names (permissions for telephone interview = 1) submitted to D. Gregory for telephone interviews.		String field X = Yes	Note: Date of Last Disc. Discharge field eliminated

Appendix G

Grow Along with Me Master Spreadsheet

Cross-map of fields collected prior to¹⁹, and after October 2008 (Mar 7, 2009)

Key:

Blue fields = change in data collected

Green fields = eliminated data elements

Yellow = attention

Mar-Sept 2008	Oct 2008 - present	Selection fields match?
Last name	Last name	
First name	First name	
Gender	Gender	
Date of birth	Date of birth	
Date ASQ completed	Date ASQ completed	
ASQ completed by	ASQ completed by	
Relationship to child	Relationship to child	
Phone number	Phone number	
Mailing address	Mailing address	
CityTownProv	City/town	
	Province	
Postal code	Postal code	
Administering agency	Administering agency	x
Consent Question #2	Consent for Eval Use	x
Consent Question #3	Consent for Tele. Interview	x

¹⁹ March 2008-September 2008

Mar-Sept 2008	Oct 2008 - present	Selection fields match?
ASQ Level	ASQ Level	x
Hears well?	Hears well?	x
Comments G	Comments G	na
Talks like others?	Talks like others?	x
Comments F	Comments F	na
Understand child	Understand child	x
Comments E	Comments E	na
Walksectlike others	Walksectlike others	x
Comments D	Comments D	na
Family Hx of hearing impairment		x
Comments C	Comments C	na
Visionconcerns	Visionconcerns	x
Comments B	Comments B	na
Recentmedicalproblems	Recentmedicalproblems	x
Comments A	Comments A	na
Other	Other	x
Comments	Comments	na
Communication	Communication	x
ComDel	ComDel	x
Grossmotor	Grossmotor	x
Finemotor	Finemotor	x
FinMotDel	FinMotDel	x
Problemsolving	Problemsolving	x
ProbSolDel	ProbSolDel	x
Personalsocial	Personalsocial	x
PSDel	PSDel	x
Referralmade	Referralmade	x
Disciplin1_A	Separate fields for each selection field with Yes/No responses	1 = PT
Discipline2_A		2 = Audio
Discipline3_A		3 = Baby Team
Discipline4_A		4 = OT

Mar-Sept 2008	Oct 2008 - present	Selection fields match?
	Note: Change to Request for PT referral in data dictionary	5 = IPD 6 = Feeding Team 7 = SLP 8 = BMS 9 = Unsure 999 Not applicable
Referral date	Referral date	x
AgeatTimeofReferralMonths	AgeatTimeofReferralMonths	x
ISCDischargeStatusDate	ISCDischargeStatusDate	
Reviewoutcome 1 = START assessment 2 = Clinical assesmsnet 3 = START sound assessment 4 = Urgent 5 = START Ax for SLP & IPD – clinical Ax for another discipline	START Ax Clinical Ax STARTSound Ax Urgent (All coded as yes, no, not applicable)	
START Team Assessment		x
DateofAxddmmyyyy	DateofAxddmmyyyy	na
Assessment Recommendation (1) 1 = START follow-up group 2 = START follow-up group while waiting for Clinical group 3. Clinical Services	Separate field with yes/not, not applicable responses for non-highlighted fields . new: START follow-up Individual Urgent clinical	NO Separated to allow for selection of more than one recommendation; new fields in Oct database

Mar-Sept 2008	Oct 2008 - present	Selection fields match?
(group) 4. Clinical Services (individual) 5. Referral to other discipline for assessment 6. Parent Group (CORE) 7. Parents as Teaches 8. Family Centre 9. Parent Link 10 Other Community Services 11. Home programsuggestions 12. Follow-up ASQ 13. Urgent 14. Start Phono group 15. START individual treatment 999 not applicable	assessment/treatment	
Assessment Recommendation (2)		
Assessment Recommendation (3 - 7)		
Discipline Referred Repeat (1-4) 1 = PT 2 = Aud 3 = Baby Team 4 = OT	*Grouped to separate discipline-specific fields with yes/no responses for ease of computer analysis e.g. Assigned to	NO

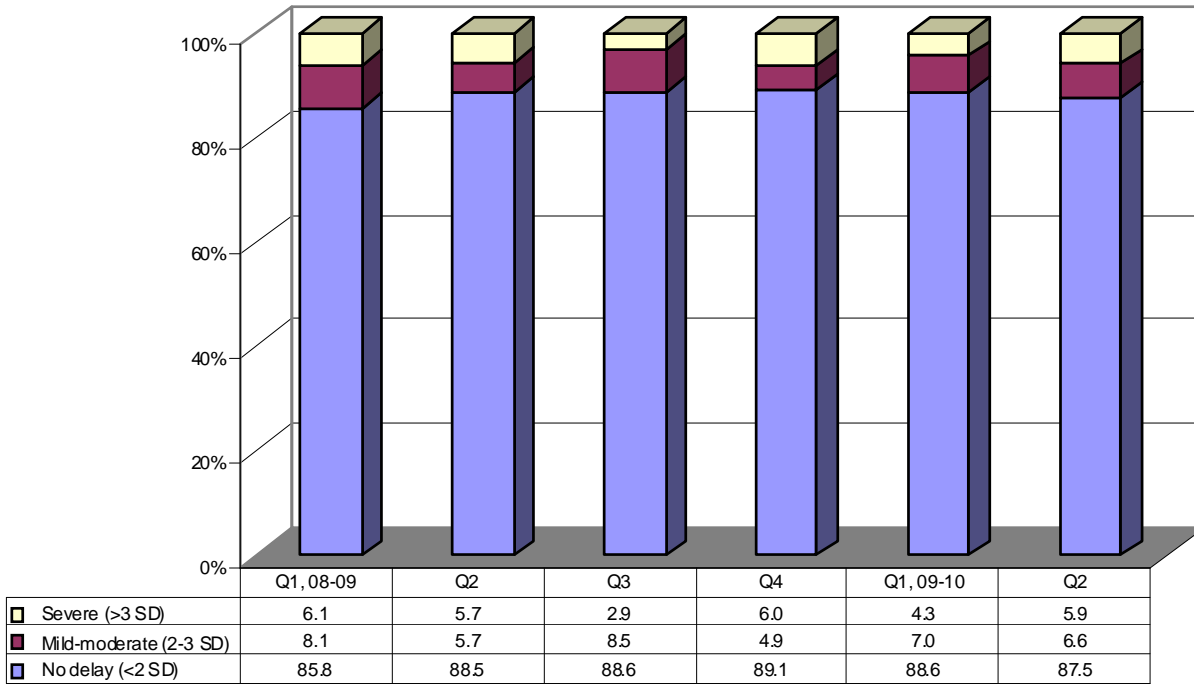
Mar-Sept 2008	Oct 2008 - present	Selection fields match?
5 = IPD 6 = Feeding Team 7 = SLP 8 = BMS 9 = Unsure 999 Not applicable	(discipline) Yes/No	
Date of Ref	*Date of (Discipline) referral	X Will need to cross-reference back to Discipline referred 1-4 & Date of referral
DateofAx (1-4)	*Date of (Discipline) assessment	X Will need to cross-reference back to Discipline referred 1-4 & Date of referral
DateofFirstTx (1-4)	*Date of first (Discipline) treatment	X Will need to cross-reference back to Discipline referred 1-4 & Date of referral
@numberofminutes of Tx Including Ax (1-4)	*# of minutes of Tx Including Ax (specific to discipline)	X Will need to cross-reference back to Discipline

Mar-Sept 2008	Oct 2008 - present	Selection fields match?
		referred 1-4 & Date of referral
Date of DC (1-4)	*Date of (discipline) discharge	X Will need to cross-reference back to Discipline referred 1-4 & Date of referral
Discharge reason (1-4)	*(Discipline) D/C reason	X Will need to cross-reference back to Discipline referred 1-4 & Date of referral
S/C Point (1-4)	*(Discipline) D/C Point	X Will need to cross-reference back to Discipline referred 1-4 & Date of referral
	Fields repeated for each separate discipline: <ul style="list-style-type: none"> • SLP • IPD • OT • PT • Aud 	

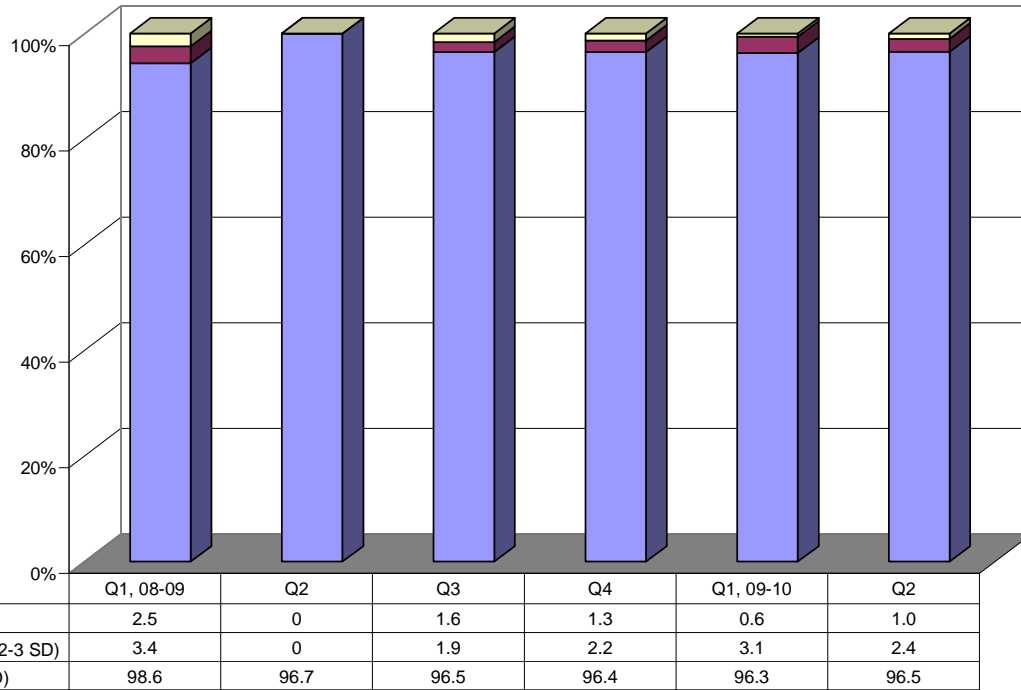
Appendix H

ADQ Domain Delay Rates by Severity and Timeframe: All Children flagged for further assessment as a result of ASQ completion Jan 08-Sept.09

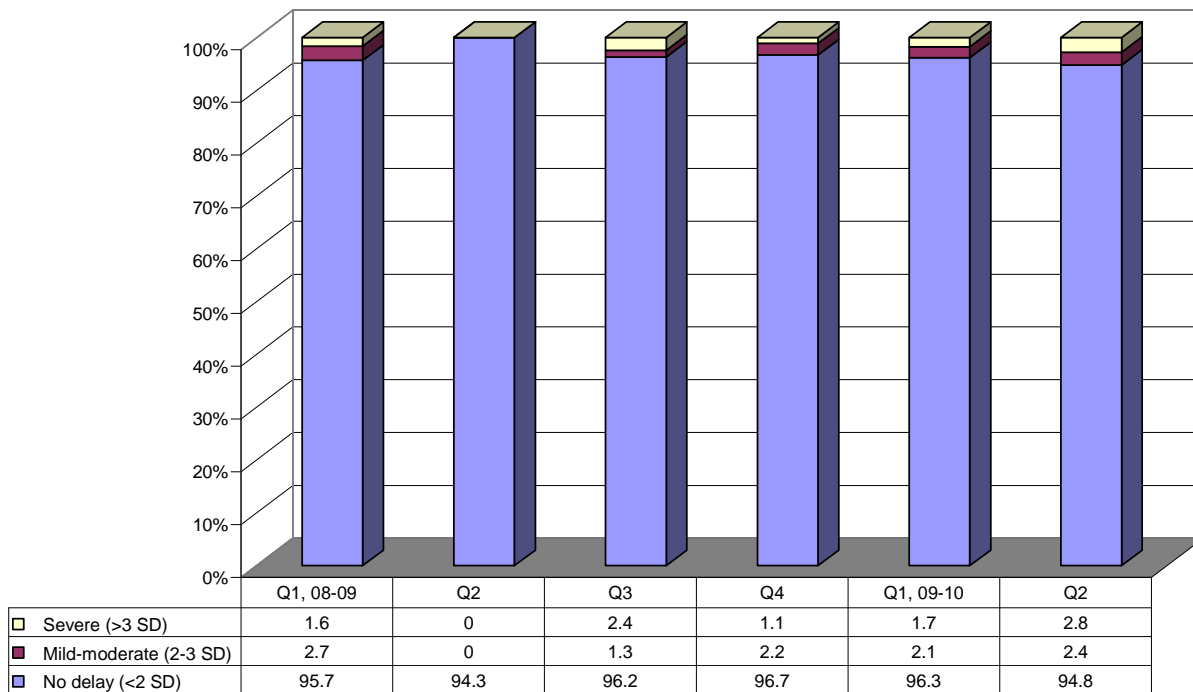
Communication Delays
(by quarter of ASQ receipt)



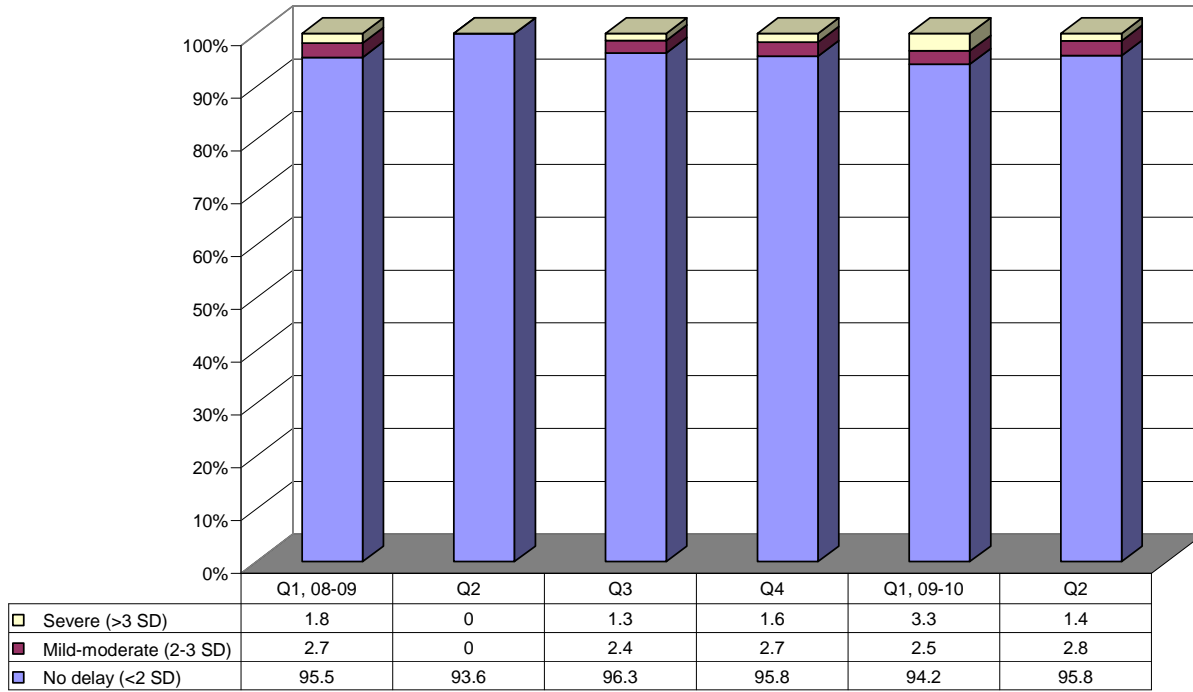
**Gross Motor Delays
(by quarter of ASQ receipt)**



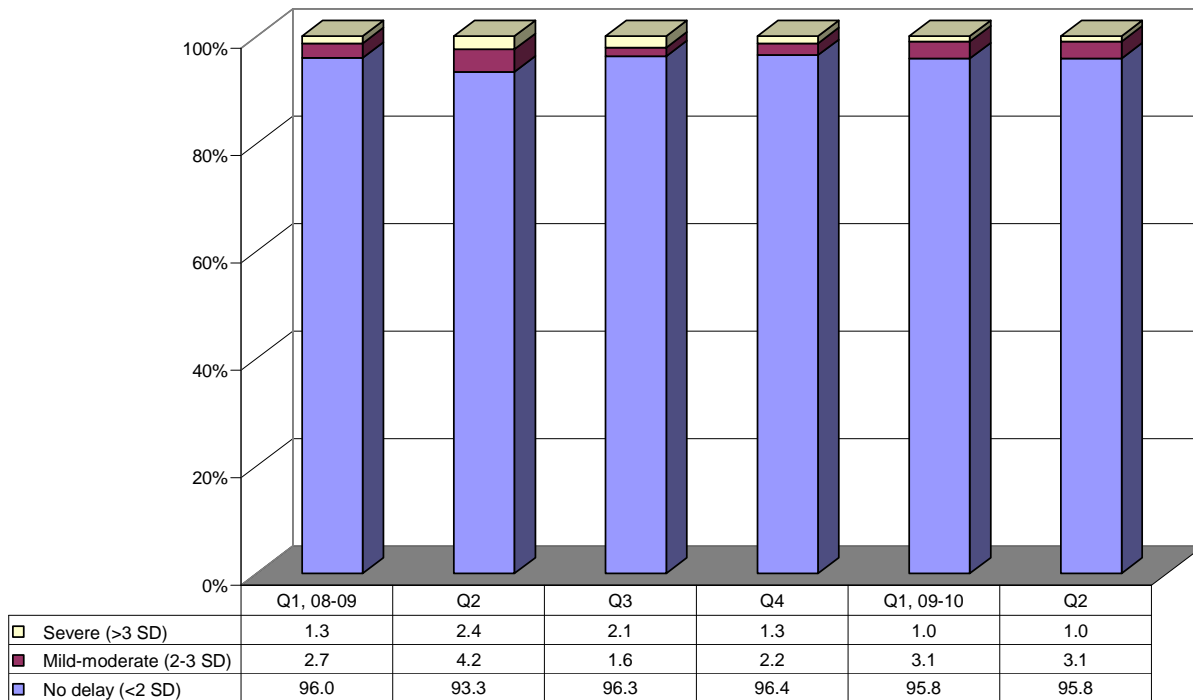
**Fine Motor Delays
(by quarter of ASQ receipt)**



**Problem-Solving Delays
(by quarter of ASQ receipt)**



**Personal Social Delays
2008-09 (by quarter of ASQ receipt)**



Appendix I

ASQ risk indicators by age group and severity*

ASQ Risk Indicators by Age Group & Severity, GAWM Project (N=2425)					
	Communication	Gross Motor	Fine Motor	Problem Solving	Personal - Social
18 Month n=1117					
Severe	0.8% (n=9)	1.3% (n=14)	1.7% (n=19)	2.6% (n=29)	0.7% (n=8)
Mild/moderate	5.2% (n=58)	1.6% (n=18)	1.4% (n=16)	2.8% (n=31)	2.4% (n=27)
No delay	94.0% (n=1050)	97.1% (n=1085)	96.7% (n=1081)	94.6% (n=1049)	96.9% (n=1081)
20 Month n=413					
Severe (> 3 SD)	13.1% (n=54)	2.4% (n=10)	3.2% (n=13)	1.0% (n=4)	2.7% (n=11)
Mild/moderate (2-3 SD)	10.9% (n=45)	2.9% (n=12)	1.9% (n=8)	1.5% (n=6)	3.6% (n=15)
No delay(<2 SD)	76.0% (n=314)	94.7% (n=391)	94.9% (n=391)	97.6% (n=401)	93.7% (n=386)
22 Month n=154					
Severe (> 3 SD)	9.7% (n=15)	3.2% (n=5)	1.3% (n=2)	0.7% (n=1)	2.6% (n=4)
Mild/moderate (2-3 SD)	12.3% (n=19)	7.8% (n=12)	5.8% (n=9)	3.9% (n=6)	3.9% (n=6)
No delay(<2 SD)	77.9% (n=120)	89.0% (n=137)	92.3% (n=143)	95.4% (n=146)	93.5% (n=144)
24 Month n=208					
Severe (> 3 SD)	8.7% (n=18)	0.5% (n=1)	0.5% (n=1)	0.5% (n=1)	0.5% (n=1)
Mild/moderate (2-3 SD)	7.7% (n=16)	2.9% (n=6)	2.4% (n=5)	1.9% (n=4)	2.9% (n=6)
No delay(<2 SD)	83.7% (n=174)	96.6% (n=201)	97.1% (n=202)	97.6% (n=203)	96.6% (n=201)
27 Month n=67					
Severe (> 3 SD)	6.0% (n=4)	1.5% (n=1)	0.0% (n=0)	1.5% (n=1)	4.5% (n=3)
Mild/moderate (2-3 SD)	9.0% (n=6)	7.5% (n=5)	4.7% (n=3)	6.0% (n=4)	6.0% (n=4)
No delay(<2 SD)	85.1% (n=57)	91.0% (n=61)	95.3% (n=61)	92.5% (n=62)	89.6% (n=60)
30 Month n=118					
Severe (> 3 SD)	5.1% (n=6)	0.0% (n=0)	0.8% (n=1)	1.7% (n=2)	0.8% (n=1)
Mild/moderate (2-3 SD)	2.5% (n=3)	1.7% (n=2)	4.2% (n=5)	0.0% (n=0)	3.4% (n=4)
No delay(<2 SD)	92.4% (n=109)	98.3% (n=116)	94.9% (n=112)	98.3% (n=115)	95.8% (n=113)
33 Month n=97					
Severe (> 3 SD)	8.4% (n=8)	1.0% (n=1)	3.1% (n=3)	3.1% (n=3)	2.1% (n=2)
Mild/moderate (2-3 SD)	14.4% (n=14)	5.2% (n=5)	3.1% (n=3)	5.2% (n=5)	5.2% (n=5)
No delay(<2 SD)	76.8% (n=73)	93.8% (n=91)	93.8% (n=90)	91.7% (n=88)	92.8% (n=90)
36 Month n=234					
Severe (> 3 SD)	7.3% (n=17)	0.4% (n=1)	2.2% (n=5)	7.3% (n=17)	3.0% (n=7)
Mild/moderate (2-3 SD)	3.4% (n=8)	1.7% (n=4)	3.4% (n=8)	1.3% (n=3)	1.3% (n=3)
No delay(<2 SD)	89.3% (n=209)	97.9% (n=229)	94.4% (n=219)	94.1% (n=213)	95.7% (n=222)

Source: GAWM Master spreadsheet

* Total N includes 6 children whose ASQ was submitted in October 2009.

Appendix J

Gateway Interval/ Wait Times by Discipline and Quarter

(Limited to children with discipline specific data endpoint [by quarter] available)

Discipline-specific Gateway Interval/Wait Times						
Quarter 3, 2008-09	n=	Mean	Median	Mode	Range	Standard Deviation
Intake Wait Time (Days)						
Speech Language Pathology	49	46.9	31.0	0	0-168	46.0
Infant Preschool Development Educator	36	32.0	13.5	0	0-153	41.8
Occupational Therapy	7	42.9	26.0	0	0-153	51.2
Physiotherapy	10	81.6	67.0	7	7-204	77.5
Behavior Management Specialist	2	7.0	7.0	0	0-14	9.9
Audiology	na	na	na	na	na	na
Intake To Assessment Wait Time (Days)						
Speech Language Pathology	40	53.2	40.5	39.0	4-217	45.9
Infant Preschool Development Educator	22	39.3	29.0	39.0	4-152	39.3
Occupational Therapy	2	58.0	58.0	0	2-114	79.2
Physiotherapy	4	38.3	17.5	4.0	4-114	50.9
Behavior Management Specialist	0	na	na	na	na	na
Audiology	6	192.3	201.0	99.0	99-251	50.2
Assessment to Treatment Time (Days)						
Speech Language Pathology	16	62.6	29.5	17.0	12-197	65.2
Infant Preschool Development Educator	11	27.0	26.0	0	0-80	21.9
Occupational Therapy	1	201.0	201.0	201.0	201.0	na
Physiotherapy	1	15.0	15.0	15.0	15.0	na
Behavior Management Specialist	0	na	na	na	na	na
Audiology	na	na	na	na	na	na
Assessment/Treatment Time (Hours) (Limited to children discharged after intervention)						
Speech Language Pathology	14	11.5	7.3	5.0	3.2 - 26.8	7.5
Infant Preschool Development Educator	11	3.7	3.8	2.5	2.2 - 5	1.0
Occupational Therapy	2	10.5	10.5	7.4	7.4 - 13.5	4.3
Physiotherapy	0	na	na	na	na	na
Behavior Management Specialist	0	na	na	na	na	na
Audiology	0	na	na	na	na	na
Treatment to Discipline-specific Discharge (Days)						
Speech Language Pathology	12	70.4	71.5	29.0	29-93	17.9
Infant Preschool Development Educator	9	72.9	77.0	93.0	21-113	27.9
Occupational Therapy	1	149	149	149	149	na
Physiotherapy	0	na	na	na	na	na
Behavior Management Specialist	0	na	na	na	na	na
Audiology	4	0	0	0	0	na
Discipline-specific Referral to Discipline-specific Discharge Time (Days)						
Speech Language Pathology	34	153.5	151.5	168.0	38-299	69.9
Infant Preschool Development Educator	22	150.8	153.0	153.0	13-580	130.6
Occupational Therapy	5	128.8	153.0	153.0	12-236	83.4
Physiotherapy	9	129.0	123.0	18	18-204	58.9
Behavior Management Specialist	1	14.0	14.0	14.0	14.0	na
Audiology	7	189.6	199.0	199.0	99-227	41.6

Source of Data: Meditech, GAWM Master Spreadsheet (April 2009 GOLD, AxTx Time, Nov. 2009)

Discipline-specific Gateway Interval/ Wait Times						
Quarter 4, 2008-09	n=	Mean	Median	Mode	Range	Standard Deviation
Intake Wait Time (Days)						
Speech Language Pathology	15	28.3	30.0	0	0-68	23.4
Infant Preschool Development Educator	18	27.2	11.0	0	0-123	39.4
Occupational Therapy	6	24.8	11.0	0	0-91	34.0
Physiotherapy	4	34.0	32.5	30.0	30-41	5.2
Behavior Management Specialist	1	0.0	0.0	0	0	na
Audiology	na	na	na	na	na	na
Intake To Assessment Wait Time (Days)						
Speech Language Pathology	31	40.4	29.0	21.0	3-138	29.8
Infant Preschool Development Educator	15	66.1	55.0	21.0	15-193	49.7
Occupational Therapy	4	47.5	45.0	0	0-100	50.9
Physiotherapy	2	62.0	62.0	43.0	43-81	26.9
Behavior Management Specialist	1	7.0	7.0	0	na	na
Audiology	15	131.5	131.0	160.0	8-256	69.7
Assessment to Treatment (Days)						
Speech Language Pathology	36	76.3	56.5	43.0	5-266	65.1
Infant Preschool Development Educator	15	49.9	43.0	26	4-235	56.4
Occupational Therapy	1	29.0	29.0	29.0	na	na
Physiotherapy	2	35.5	35.5	28.0	28-43	10.6
Behavior Management Specialist	2	83.0	83	31	31-135	73.5
Audiology	na	na	na	na	na	na
Assessment/Treatment Time (Hours) (Limited to children discharged after intervention)						
Speech Language Pathology	13	12.0	7.0	7.0	3.8 - 37.9	12.6
Infant Preschool Development Educator	9	4.4	5.0	1.0	4-10	2.4
Occupational Therapy	1	na	na	na	na	na
Physiotherapy	0	na	na	na	na	na
Behavior Management Specialist	0	na	na	na	na	na
Audiology	0	na	na	na	na	na
Treatment to Discipline-specific Discharge						
Speech Language Pathology	11	99.2	77.0	73.0	41-218	62.8
Infant Preschool Development Educator	12	103.3	106.0	21.0	21-183	49.6
Occupational Therapy	0	na	na	na	na	na
Physiotherapy	0	na	na	na	na	na
Behavior Management Specialist	1	0	0	0	0	na
Audiology	0	na	na	na	na	na
Discipline-specific Referral to Discipline-specific Discharge						
Speech Language Pathology	28	151.3	120.0	116.0	1-313	93.5
Infant Preschool Development Educator	33	155	160.0	98.0	1-334	89.5
Occupational Therapy	0	na	na	na	na	na
Physiotherapy	4	45.3	33.0	30	30-85	26.6
Behavior Management Specialist	1	155.0	155.0	155.0	155.0	na
Audiology	10	135.8	159.5	8.0	8-220	66.5

Source of Data: Meditech, GAWM Master Spreadsheet (April 2009 GOLD)

Discipline-specific Gateway Interval/ Wait Times						
Quarter 1, 2009-10	n=	Mean	Median	Mode	Range	Standard Deviation
Intake Wait Time (Days)						
Speech Language Pathology	57	29.2	20.0	0	0-144	30.1
Infant Preschool Development Educator	2	3.0	3.0	0	0-6	4.24
Occupational Therapy	1	0	0	0	na	na
Physiotherapy	3	15.3	19.0	7.0	7-20	7.23
Behavior Management Specialist	0	0.0	0.0	0	na	na
Audiology	na	na	na	na	na	na
Intake To Assessment Wait Time (Days)						
Speech Language Pathology	9	40.4	20.0	9.0	9-173	52.1
Infant Preschool Development Educator	2	190.5	190.5	143.0	143-238	67.2
Occupational Therapy	1	35	35.0	35	35	na
Physiotherapy	2	11.0	11.0	1.0	1-21	14.1
Behavior Management Specialist	0	0.0	0.0	0	na	na
Audiology	21	135.9	138.0	24.0	2-412	113.6
Assessment to Treatment (Days)						
Speech Language Pathology	7	71.0	78.0	13.0	13-156	56.7
Infant Preschool Development Educator	5	42.0	13.0	7	7-134	53.9
Occupational Therapy	0	0.0	0.0	0	na	na
Physiotherapy	1	72.0	72.0	72.0	72.0	na
Behavior Management Specialist	0	0.0	0.0	0	na	na
Audiology	na	na	na	na	na	na
Assessment/Treatment Time (Hours) (Limited to children discharged after intervention)						
Speech Language Pathology	6	10.6	8.3	6.3	8.3-17.5	5.3
Infant Preschool Development Educator	5	4.8	4.5	2.0	2-8.3	2.2
Occupational Therapy	0	0.0	0.0	0	na	na
Physiotherapy	2	2.0	2.0	1.7	1.6 - 2.3	0.4
Behavior Management Specialist	0	na	na	na	na	na
Audiology	0	na	na	na	na	na
Treatment to Discipline-specific Discharge						
Speech Language Pathology	11	116.0	91.0	76.0	56-216	57.8
Infant Preschool Development Educator	4	105.5	94.0	62.0	62-172	47.2
Occupational Therapy	0	0.0	0.0	0	na	na
Physiotherapy	1	246.0	246.0	246.0	246.0	na
Behavior Management Specialist	0	0.0	0.0	0	na	na
Audiology	4	4.5	4.5	0	0-9	5.2
Discipline-specific Referral to Discipline-specific Discharge						
Speech Language Pathology	14	198.7	174.0	32.0	32-502	119.9
Infant Preschool Development Educator	6	175.3	176.5	117.0	117-228	36.6
Occupational Therapy	0	na	na	na	na	na
Physiotherapy	2	269.0	269.0	126	126-412	202.23
Behavior Management Specialist	0	na	na	na	na	na
Audiology	5	176.0	148.0	106.0	106-324	85.0

Source of Data: Meditech, GAWM Master Spreadsheet (Nov 2009 GOLD)

Discipline-specific Gateway Interval/ Wait Times						
Quarter 2, 2009-10	n=	Mean	Median	Mode	Range	Standard Deviation
Intake Wait Time (Days)						
Speech Language Pathology	40	27.0	18.5	0	0-98	28.7
Infant Preschool Development Educator	16	34.7	20.0	0	0-107	36
Occupational Therapy	8	26.4	15.5	0	0-91	34
Physiotherapy	3	14.0	21.0	21	0-21	12.1
Behavior Management Specialist	4	1.3	0.0	0	0-5	2.5
Audiology	na	na	na	na	na	na
Intake To Assessment Wait Time (Days)						
Speech Language Pathology	20	46.8	29.0	6	2-251	56.6
Infant Preschool Development Educator	8	31.8	24.5	0	0-89	28.6
Occupational Therapy	7	31.9	26.0	11	11-99	30.8
Physiotherapy	5	29.4	25.0	15	15-56	16.9
Behavior Management Specialist	0	na	na	na	na	na
Audiology	13	100.8	70.0	23.0	23-198	64.4
Assessment to Treatment (Days)						
Speech Language Pathology	23	121.3	96.0	10	10-425	87.5
Infant Preschool Development Educator	3	30.3	14.0	7	7-70	34.5
Occupational Therapy	3	25.7	17.0	6	6-54	25.1
Physiotherapy	1	26.0	26.0	26	na	na
Behavior Management Specialist	0	0.0	0.0	0	na	na
Audiology	na	na	na	na	na	na
Assessment/Treatment Time (Hours) (Limited to children discharged after intervention in the current quarter)						
Speech Language Pathology	2	3.8	3.8	2.5	2.5-5	1.8
Infant Preschool Development Educator	0	na	na	na	na	na
Occupational Therapy	1	2.8	2.8	2.8	2.8	na
Physiotherapy	0	na	na	na	na	na
Behavior Management Specialist	0	na	na	na	na	na
Audiology	0	na	na	na	na	na
Treatment to Discipline-specific Discharge						
Speech Language Pathology	10	152.3	110.5	30.0	30-364	108.1
Infant Preschool Development Educator	8	193.5	122.5	62.0	62-367	132.0
Occupational Therapy	3	153.7	153.0	0.0	0-308	154
Physiotherapy	1	159.0	159.0	159.0	na	na
Behavior Management Specialist	2	137.5	137.5	130.0	130-145	10.6
Audiology	16	52.7	7.5	0.0	0-184	67.6
Discipline-specific Referral to Discipline-specific Discharge						
Speech Language Pathology	40	155.3	60.0	0.0	0-1140	257.7
Infant Preschool Development Educator	16	215.9	187.0	77.0	25-536	162.1
Occupational Therapy	8	304.9	389.5	419.0	23-470	171.1
Physiotherapy	3	155.0	76.0	56.0	56-333	154.5
Behavior Management Specialist	4	156.3	139.5	100.0	100-246	66.84
Audiology	22	160.5	139.0	137.0	23-497	114.8

Source of Data: Meditech, GAWM Master Spreadsheet (Nov 2009 GOLD)