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ARTICLES

Parents' Experience with Routine Infant Growth Monitoring

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Introduction

Routine growth monitoring (RGM) is universally considered an integral part of pediatric primary care. While traditionally used to detect malnutrition, it is now primarily used to identify underlying causes of short stature and childhood obesity in developed countries.[1-3] Despite widespread use and assumptions that RGM is a safe, effective, low-cost screening intervention,[2] there is little evidence to support these beliefs. Several reviews have concluded that "there is insufficient reliable information to be confident about whether routine growth monitoring is of benefit to child health"[1, 3-7] and others have raised concerns about the potential for associated harm.[1, 2, 4-6, 8, 9]
Studies have consistently shown that many parents and providers have difficulty interpreting growth charts which can lead to confusion, anxiety or inappropriate provider and parent responses.[9-11] Considerable time is dedicated to RGM for both parents and providers and it may displace other beneficial interventions.

Most of the policy around RGM has been driven by providers, particularly specialist paediatric endocrinologists and dieticians, neither of whom generally perform RGM, with scarce attention paid to the important voices of parents. Although some studies on related issues (breastfeeding, obesity, comprehension of growth charts) have indirectly touched on the topic, a recent scoping review did not identify any previous qualitative studies that directly explored parents' experiences of infant RGM[9] in high-income settings.

The objectives of this qualitative study were to better understand parents' experiences with infant RGM with respect to: 1) potential benefits and harms, 2) comprehension and 3) self-reported behaviour change.

Better understanding parents' experiences may influence how front-line care providers perform RGM and communicate growth information. This could provide more evidence to evaluate the risks and benefits of RGM and lead to a more positive experience for parents.

Methods

Study Design

We used a qualitative research study design, Interpretive Description (ID) which provides a framework for applied qualitative research reflecting the complexities encountered in health care practice. This study seeks to access complex, subjective phenomena such as experience, perception, opinion, values, meanings and beliefs, as related to parents' experiences with RGM, an intention that is well matched with the Interpretive Description applied research method.[12-14]

Inclusion/Exclusion Criteria

Inclusion: English speaking parents of at least one child 2-5 years of age at the time of the interview living in or near the target communities (Cranbrook, Kelowna or Vancouver).

Exclusion: Parents of children with serious medical problems who would require frequent weight monitoring for medical reasons, including parents of preterm babies (<37 weeks).

Population

Parents were purposefully sampled from three different types of communities in British Columbia with a broad range of demographic characteristics. The target sample size was 20-30 participants as suggested by Thorne.[15] Participants were recruited through posted and electronic recruitment flyers on relevant online platforms and locations, an online platform for health research volunteers (https://www.reachbc.ca/ and snowball sampling.

Data Collection

Demographic information was collected via an online survey. Team members conducted one-on-one semi-structured telephone or zoom interviews lasting 30-45 minutes. Interviews were audio-recorded and transcribed. The lead team members conducting the interviews included one family physician (IH) and two masters level nursing faculty members (SO and NS). Two team members (IH and SO) have done other research related to RGM and have experience and training in qualitative research methods. All three team members are female and have clinical experience with RGM in practice and two have personal experience with their own children. None of the researchers were known to any of the interviewees. In some cases, research trainee team members were present during the interviews (SS,KX).

We developed a semi-structured interview guide (Table 1, Appendix 1) based on Donabedian's classification of quality of medical care (structure, process and outcome),[16] further differentiated using the domains defined by patients regarding perceptions of health care services described by Sofaer.[17] To attempt to gain further insight from parents about the utility of growth monitoring as a stimulus for behaviour change related to their child's weight we developed the questions in this domain using the Theory of Planned Behaviour to help us understand why and how parents changed behavior.[18]

As the interviews progressed, we sought to iteratively understand and interpret parental perceptions using critical reflection and examination to make meaning of the data as it was collected. We made minor modifications to the interview guide in response to interviewers' observations,

Table 1. Question Domains for Interview Guide	
Process	Patient-centred
	Communication
	Information
	Courtesy
	Emotional support
	Technical quality
Structure	Access
	Efficiency
Outcome	Expectations
	Results of process
	Addressing problem
	Improvement in function
Behaviour	Change in attitude
	Subjective norm
	Perceived behavioural control

field notes and discussions within the team, in order to explore new and important themes as they were identified. We also regularly discussed the need for further recruitment based on the frequency of new ideas being raised.

Participants received a $25 electronic gift card after completion of the study.

Data Analysis and Interpretation

We used an interpretive description process for analysis based on the steps described by Archibald et al.[19] First, we listened to audio-recordings and read transcripts in detail several times then began to group codes into preliminary categories. These were used to code the remainder of the interviews, adding new codes as required. We used qualitative research software (Nvivo) along with a combination of manual sorting and visualization. The team met at regularly to discuss findings and identify key messages in relation to the guiding theoretical frameworks and pragmatic relevance to the clinical setting. Analytic rigour was enhanced through collaborative reflexivity and triangulation among multiple researchers. We used the consolidated criteria for reporting qualitative research (COREQ) checklist to ensure adherence to high quality standards.[20] (Appendix 2)

Ethics

The study received ethical approval through a harmonized review from the University of British Columbia (UBC) Behavioural Research Ethics Board (Reference # H20-02871).

Findings

Of the 32 participants who were recruited, 3 were deemed ineligible and another 8 were lost to follow-up prior to completing an interview. Demographic information from the 21 participants who completed the interviews is summarized in Table 2.

Table 2. Participant Demographics (n=21) *	
Gender	
Female	21
Male	0
Age	
20-30	1
31-40	16
41+	1
Marital status	
Married	15
Common Law	1
Single	1
Divorced	1
Education level	
Secondary school	2
Post-secondary certification	3
Post-graduate certification	13
Annual household income	
$50,000 - $79,999	3
$80,000 - $99,999	3
$100,000 and over	12
Number of children	
1	7
2	8
3	1
Location	
Urban	13
Rural	8
*Three participants did not respond to most demographic questions	

KEY THEMES

(See Table 3, Participants Quotes)

Growth Monitoring is an Emotionally Charged Topic

Many parents were soothed and reassured by regular monitoring if they interpreted their child's growth as normal while others reported anxiety, worry, fear and guilt. Some had been warned antenatally by other parents that growth monitoring could be very stressful. Worries were exacerbated by confusion due to inconsistency between providers in interpretation and measurement.

Some respondents described comparisons of size with other parents as an additional stress, particularly when babies were smaller than average. The cultural perception that "bigger is better" among babies was most prevalent but some also perceived stigma for infants who were larger.

Table 3. Participant quotes

Growth monitoring is an emotionally charged subject	
Worry / guilt / pressure	"A lot of pressure, a lot of guilt, a lot of worrying..." P1 "I'm blaming myself because I'm the parent... at the back of your mind you're like... I'm such a bad mom". P12 "I felt a little bit anxious about it with my first child because it was happening a lot...they always want to know the measurement".P26 "...getting really anxious and just feeling a little bit stressed out and frustrated, because...nothing is working..." P28 "...scary for parents to go through that and always have to think "my perfect little child might have something wrong".P3 "[RGM] can create a lot of emotional distress for a mother and it can set off that whole nursing relationship in a bad trajectory" P1
Anxiety about low weight	"I had always kind of been warned by friends ...they would really push, whether the weight was on the mid-range to low side, that there might be something wrong."P3 "I can see it creating some anxiety if your child is not growing as they "should be"" P28 "she started off in 75th percentile ...and then once it dropped below 50 I started to get concerned...thinking why is she not in the average percentile? Am I not feeding her enough?... And then every mom starts to get stressed... once you drop below the 50th percentile" P23 "That felt catastrophic in many ways. I was like, "Oh, god, she's been on the third percentile forever, but now she's going to drop, she's going to shrivel up, she's not going to eat anything!""P2 "And I was just going further down the rabbit hole... thinking that I was not doing a good job and having anxiety like "she's so little, what if there's something wrong with her?"" P2 "Some of them would leave in tears because they were talking so heavily about "your child is not this, your child is not that, they're not growing enough" P3
Obsession with monitoring	"I was really nervous so I had an app and I tracked absolutely everything."P13 "It just became an obsessive thing about how small she is."P2 I had his measurements every month, so for me it made me feel better, like my data is complete." P21
Comparison with others	"Moms talk about it, right? They're like, "Oh, he's 95th percentile. He's huge for his age."P2 "I feel like it seems like a point of pride to have a child that's more than 50th percentile." P26 "There's some pretty brutal Mommy culture wars out there, and people compare each other and they compare their babies and their own bodies." P1
Reassurance	"Being a first-time mom, the benefits were that reassurance that I'm doing a good job of feeding him." P4 "Having monitoring does give me a peace of mind." P29 "It was comforting knowing that she was growing at the rate she should be." P28
Understanding of the role of growth monitoring	
Ensure overall good health	"To make sure everything's on track, that there's nothing I should be concerned about." P19 "To make sure that you're not starving them." P28 "Part of the general health monitoring of how children are developing." P26 "If everything is going well, then the baby's growth is steady and consistent, not rapid or too slow, but fairly regular range." P7
Importance of staying on the curve	"If they're following their own growth curves then everything is fine, but if they're dropping then I just need to pay more attention to make sure that they're getting enough calories." P23 "It doesn't matter how big or small they start out... but then they should be growing along their percentile." P9 "To make sure that your child was consuming enough so that they weren't dropping off of the curve." P21
Misunderstanding	"She just needed more milk, avocado, and butter... If we didn't have that appointment, you know, it could've gone further and maybe at some point she could've gone way off or lost weight." P3 "Without that [RGM] there's just a lot of risk." P3 "When our child came out and he was 49cm and average is 50cm, I was like "Oh my god what's wrong?""P21 "At three months I thought, "Oh my goodness I have to wait for another three months! What if something goes wrong between now and then?" P21 "The larger the number, the better, the healthier your child is." P26
Awareness of individual differences	"Just because your child is 95% doesn't mean they're doing great. Like it's not like they get an A." P13 "I have started to understand that every you know every child grows in a different rate, and that some kids are bigger than others." P23 "You kind of start to use it as a barometer for how you're doing, and it's not really a realistic barometer." P2
Differences in provider communication	"There's been a lack of interpretation of that information in general." P1 "Putting it on a growth chart for me like, "this is where it is on the growth curve and they're tracking their own curve"... that interprets that piece of information for me, and it's helpful." P1 "The public health nurse was like, "Oh, you know, maybe you should have a home visit. She looks quite pale." and "Oh, you know, and she is quite small" ... really kind of stoking those fires [but] the pediatrician was just like, "Yeah, the world needs skinny people, too, right?" If I had the messaging consistently from all providers... that would have been really helpful." P2 "Usually I have the vaccine appointments with the public health nurse and then we also have the well-being appointments for the kids. They'll do measuring at both of those appointments. Sometimes it can be that you have a two-month check-up for the baby and then you also have the two-month vaccine, it can be close together." P9 "They have a different scale, and it would be different from the doctor's office. So if you're not consistent with which scale you're using, it can throw off or the numbers." P12 "I just found that it was kind of inaccurate, like with the measuring tape. There was one time when she was like 10 cm off and I know she did not shrink 10cm, somebody measured something inaccurately." P29 "If my doctor was concerned I'd be concerned, but if public health was concerned I probably wouldn't be concerned." P3
Expectations	"I imagine most people don't really know about it until they have that first experience with the public health nurse." P3 "I guess I expected it to happen, to be thorough." P31 "I'm pretty neutral about it. Like if I'm there and it's available then I don't necessarily mind doing it." P26
Impact on behaviour	
Adding formula	"She suggested that we should switch from breast milk to formula because it gives more calories ...and she was fine from there on." P20 "I know with my son they were encouraging me to continue with giving formula in addition to breastmilk, because of weight gain." P26 "Right at the start...his weight dropped a little, he wasn't getting enough milk from me so we had a supplement and so [the nurse] was really reassuring there to say "you're doing a great job, we just need to supplement a little bit... " He came back again and he was fine after that." P4 "When you first have a baby and your milk doesn't come in immediately ...there can be some pressure to not be patient for breast milk to come in when a child is losing ... we need to be more patient in our culture and society... to allow breast milk to come in and not to push formula too early."P1
Changes to feeding	"Knowing that [she] is not really keeping up with her growth... I feel like I am trying to feed her more. So I guess it is changing my behaviour.P8 "I started thinking I need to fatten my child up. I need to make sure she eats more. I need to make sure we get some more healthy fats in her." P23 "She started to put the focus on higher fat and more calories after her appointment, to try and get some extra weight gain for her child." P26 "It does change my behavior... I'll be like "Okay, what are some healthy fats I can give them?" P31 "If I were to see my child go off the chart like the 95th or 100th percentile I'd think maybe they need to be eating less, right?" P23
No change	"We didn't really change our behavior, because I feel like with growth there's really nothing you can do." P31 "We fool ourselves into thinking that we can be more in control of our own children than we are of our own bodies." P1 "It did kind of worry me, but I did some Googling and followed my mom instinct." P29

Table 3 (continued). Participant quotes	
Individualized needs	
Experience	"Because this is my third child, I've been less worried. I've just been through it and I kind of trust that my children would be OK and I kind of feel more confident as parents and maybe just more busy, less ability to fret over it." P1 "I took a lot more stock into it with my first child just because just not knowing or being very new to parenting and wondering whether you are doing the best for them."P26 "Being a first time parent, I think those kind of suggestions were definitely helpful to us." P20
Type / amount of communication	"Hearing my pediatrician say "she looks great, you're doing really great. She's meeting all her milestones" and then some "she looks healthy", that kind of, "don't worry mom". That type of stuff was always helpful." P2 "Every child is different, every child grows differently and I think it really just depends on the child's needs." P10 "I think it would've been nice to really know why it matters... I like to know the reason behind it. I always find that really helpful..." P3 "I don't necessarily need a whole lot of information about it." P7
Child weight	"Because James was always growing fine I never had a situation where they had to deal with a difficult conversation ...there was never enough of a cause to be worried." P21 "Because my children were good solid weights so they have said "we could bring what's necessary to weigh and measure them - Would you like us to do that?" And I think I usually said like "no, it's fine.""P1

Parents emphasized the importance of the health care providers' words and actions in either relieving or exacerbating anxiety. They noted that frequent monitoring sends a strong message that something is wrong.

A number of parents reported obsessive behaviours using excessively frequent weighing to calm their anxiety. Other self-reported "data nerds" simply obsessed around having "a complete data set" even if they weren't worried about their child's growth.

The presence of drop-in weighing clinics at local libraries or public health units was mentioned by several parents as a place they could go to monitor more frequently which was reported to either relieve or, in some cases, heighten anxiety.

Understanding and Interpretation of RGM

Most parents had a general sense that the purpose of growth monitoring was to ensure babies were growing well ("getting enough") and seemed to understand the general concept of "following the curve". Many parents placed undue emphasis on the significance of the numbers and took these concepts to extremes, worrying about minor fluctuations or deviations from the curve. Many parents misinterpreted normal growth along the lower end of the normal range as problematic.

Some parents recognized that growth is only one component of a child's overall health. Others admitted that they had not really thought about it at all; that it was something routine that was just always done. Many parents had little or no awareness of the process of RGM prior to delivering their first child and so had no expectations around it however once they became aware that it was a routine practice then it did become an expectation for many to have growth monitored and discussed at each visit.

When asked whether they would do it if they were not expected to, most said they would, out of curiosity at least, but approximately one third said they would not although most agreed it was simple, not terribly inconvenient and not controversial.

Some parents credited growth monitoring with identifying problems that they were then able to address and this reinforced their belief in the importance of RGM.

Parents often conflated the importance of growth monitoring with the general experience of attendance at health visits and the additional information that was provided during the visit.

Several parents emphasized the importance of the visual aid of the growth chart to better understand the meaning of the measurements along with careful explanations from providers. Many parents reported using alternate sources, especially online sources, to understand the significance of the measurements and what to do about them.

Impact on Behaviour

Many parents reported that growth monitoring caused them to feed their child more or supplement with formula and to increase the frequency of monitoring. When asked theoretically if they would change their behaviour if growth was noted to be abnormal, many confidently said that they would alter their child's diet while others were skeptical about a parent's ability to influence how much or what a child eats.

Individual Variation

Throughout the interviews it was apparent that significant variation exists among individuals' emotional responses, levels of understanding, expectations and behavioural responses to RGM.

The most important factor influencing parents was experience. First-time parents reported significantly more anxiety about growth which was most pronounced in the first months of life. Several parents reflected later on that they had worried too much. Parents with older or multiple children recognized their limited ability to control a child's eating or growth and placed more emphasis on other ways of assessing health. They also had less time to focus on their second or third child and were more likely to report that RGM was inconvenient.

The other major contributor to variation in responses was child size. Parents of children above the 50th percentile were less worried, more confident and more reassured by RGM. Parents of smaller children, despite often acknowledging that some healthy children were just genetically smaller, tended to worry more, experience doubts about their adequacy as a parent and feel that they should feed their children more.

Other factors that seemed to have some influence were personality type or past medical or family history such as anxiety, personal weight struggles or previous children with growth or health problems.

Socioeconomic or educational factors were identified indirectly through parent reporting that they were able to stay at home and so had more time to learn about growth and attend visits. Parents with higher levels of education seemed less prone to misinterpreting RGM information.

Discussion

The potential for RGM to alleviate or induce anxiety, confirms the concern that has been raised by other authors and noted indirectly in other studies.[1, 4-6, 9] It is also a well-described phenomenon in parenting communities and the lay-press[21, 22] and is very familiar to most practicing clinicians who perform RGM. It is an important finding given the elevated risk of mental health problems the postpartum period and can also contribute to additional visits, referrals and investigations.

The societal stigma related to weight, in this case, usually lower infant weights can also be harmful to parents, similar to the negative effects of weight bias and stigma related to obesity[23] known to cause shame, guilt, low self-esteem and avoidance of health care. Terms like "failure to thrive" or comments such as "good job" betray our bias towards larger babies and an assumption that larger babies are being well-cared and can reinforce parents' feelings of guilt and fear.

This sample of well-educated parents seemed to have a better understanding than has been reported in other studies[9] closely mirroring the common understanding amongst health professionals. Unfortunately, even among healthcare providers and experts, the specific objectives of RGM, appropriate interpretation and recommended interventions are not clearly defined and not supported by evidence[3] which leads to inconsistency among providers. In multiple studies, healthcare practitioners have also been reported to have problems plotting and correctly interpreting growth charts.[11, 24] Most practitioners use age-based instead of the recommended length-based measures, leading to over-diagnosis of short or tall babies as under- or overweight.[25, 26] Many of the commonly used "rules of thumb" are not based on evidence. The common expectation for babies to return to birthweight by 2 weeks fails to recognize that 14 % of normal babies don't do this,[26, 27] especially those delivered by C-Section (24%) or breastfed babies. Although providers are advised to watch for infants who cross major growth percentile lines,[2] in a large database study of 9369 infants, 64% cross 1 major growth line and 38% cross two lines, officially meeting the definition of "failure to thrive".[28, 29] These basic "rules", which are also embraced by parents, oversimplify a complex process and suggest that all babies grow consistently along the same smooth percentile line from birth onwards. In reality, these smooth lines are population averages while real babies grow in bursts and pauses. It is also common for babies to shift percentile lines during the first year of growth as they transition from their birthweight, determined by the intrauterine environment, to their ultimate weight percentile, determined by their genetic potential.[30] Relying too heavily on these outdated guidelines can exacerbate confusion and misunderstanding for providers and parents, resulting in overdiagnosis and inappropriate intervention.

Reacting to small fluctuations in growth measurements by recommending behaviour change with subsequent resolution of the "problem" can inappropriately reinforce the importance of RGM for parents as noted in this study.

Another worrisome finding from this study is the number of parents who reported changing their behaviour related to growth findings, typically by feeding more or using formula. Given our focus on RGM, it is natural for parents assume the numbers have meaning and will independently take initiative to "correct" a perceived problem. There is a real risk of parents inappropriately changing their feeding practices and undermining healthy responsive feeding by pressuring children to eat more or restricting their intake increasing the risk of disordered feeding and later obesity.[31] A study that examined frequency of growth monitoring in the first weeks of life found that babies who were randomized to be monitored more frequently (on day 2-3 instead of day 5 had a statistically significant increase in formula supplementation.[32] Another study on breastfeeding mothers in the UK also found that over-reliance on monitoring instead of other aspects of feeding success could undermine mothers' confidence.[33]

Given the complexity of interpretation of growth, the frequent reports of parents accessing additional "drop-in" weighing clinics, often staffed by non-health professionals, and the proliferation of online resources related to growth is also concerning.

The wide variation in parent experiences, preferences and expectations based on parity, infant weight parenting style or past experiences suggests that trying to adopt and apply a standardized approach with all parents will fail to meet parents' needs.

Through a reductionist medical model which attempts to simplify a process as complex as infant growth and development by focusing only on easy to measure data we undermine our confidence in our own clinical powers of observation and history taking and fail to use a holistic view of the child in their context and can also undermine parents' instincts. Several parents in this study reflected that with experience, their natural intuition draws them back towards a more rational, child-centred approach where they worry less about the numbers and pay more attention to their child. As a profession, we are recognizing that more is not always better and can lead to patient harm, unnecessary healthcare utilization and cost. Excessively frequent, routine growth monitoring in infants may be another example of a traditional intervention that needs to be reassessed.

Limitations

The participants in this study were relatively homogenous socioeconomically with an over-representation of well-educated, financially secure parents and fathers were not represented at all.

Conclusions

The findings in this study contradict our assumption that RGM is a "low-cost intervention that is unlikely to result in harms, and likely to be valued by parents and clinicians"[2] and confirms that growth monitoring, although sometimes reassuring, can also lead to anxiety, over-diagnosis and inappropriate feeding changes.

Policy makers and providers should acknowledge the inherent complexity of growth monitoring, the current lack of evidence and the lack of international consensus on optimal timing, frequency or diagnostic cut-offs and use the findings of this study to mitigate some of the potential harms identified. They must recognize the significant emotional impact of growth monitoring and how providers' language and actions contribute to this. New guidelines should promote RGM that is patient centred, tailored to each family, de-emphasizes the numbers and avoiding overly frequent monitoring. Cost-benefit analyses of the RGM as a screening test would also provide valuable information.

1. Fayter, D., et al., A systematic review of the routine monitoring of growth in children of primary school age to identify growth-related conditions. Health Technology Assessment, 2007. 11(40): p. 1-182.
2. Parkin, P., et al., Recommendations for growth monitoring, and prevention and management of overweight and obesity in children and youth in primary care. Cmaj, 2015. 187(6): p. 411-21.
3. Grote, F.K., et al., Referral patterns of children with poor growth in primary health care. BMC Public Health, 2007. 7: p. 77.
4. Garner, P., R. Panpanich, and S. Logan, Is routine growth monitoring effective? A systematic review of trials. Arch Dis Child, 2000. 82(3): p. 197-201.
5. Westwood, M., et al., Childhood obesity: should primary school children be routinely screened? A systematic review and discussion of the evidence. Arch Dis Child, 2007. 92(5): p. 416-22.
6. Scherdel, P., et al., Growth monitoring as an early detection tool: a systematic review. Lancet Diabetes Endocrinol, 2016. 4(5): p. 447-56.
7. Wake, M., et al., Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial. BMJ, 2009. 339: p. b3308.
8. Ashworth, A., R. Shrimpton, and K. Jamil, Growth monitoring and promotion: review of evidence of impact. Maternal & Child Nutrition, 2008. 4(s1): p. 86-117.
9. Mansoor, Y. and I. Hale, Parent perceptions of routine growth monitoring: A scoping review. Paediatrics & Child Health, 2020.
10. Ben-Joseph EP, D.S., Izenberg N. Pediatrics. 2009;124(4):1100-1109. , Do parents understand growth charts? A national, internet-based survey. Pediatrics, 2009. 124(4): p. 9.
11. Wright, C., et al., Implications of adopting the WHO 2006 Child Growth Standard in the UK: two prospective cohort studies. Archives of Disease in Childhood, 2008. 93(7): p. 566-569.
12. Teodoro, I.P.P., de Cássia Félix Rebouças, V., Thorne, S. E., de Souza, N. K. M., de Brito, L. S. A., & Alencar, A. M. P. G., Interpretive description: A viable methodological approach for nursing research. Anna Nery School Journal of Nursing, 2018. 22(3): p. 8.
13. Thorne, S.E., Taylor, and A.Z. Francis eBooks, Interpretive description: qualitative research for applied practice. Second ed. Vol. 2. 2017, New York, NY: Routledge.
14. Thorne, S., S.R. Kirkham, and K. O'Flynn-Magee, The Analytic Challenge in Interpretive Description. International Journal of Qualitative Methods, 2004. 3(1): p. 1-11.
15. Thorne, S., S. Reimer Kirkham, and K. O'Flynn-Magee. The analytic challenge in interpretive description. International Journal of Qualitative Methods 2004 [cited 3 16/12/2020]; Available from: http://www.ualberta.ca/~iiqm/backissues/3_1/pdf/thorneetal.pdf.
16. Donabedian, A., Twenty Years of Research on the Quality of Medical Care:1964-1984. Evaluation & the Health Professions, 1985. 8(3): p. 243-265.
17. Sofaer, S. and K. Firminger, Patient perceptions of the quality of health services. Annu Rev Public Health, 2005. 26: p. 513-59.
18. Ajzen, I., Theory of Planned Behaviour Questionnaire; Measurement Instrument Database for the Social Science. 2013.
19. Archibald, M.M., et al., What Is Left Unsaid: An Interpretive Description of the Information Needs of Parents of Children With Asthma. Research in Nursing & Health, 2015. 38(1): p. 19-28.
20. Tong, A., P. Sainsbury, and J. Craig, Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care, 2007. 19.
21. Carroll, A., The Trouble With Growth Charts. The New York Times, 2020(April).
22. Laurel, G., The growth chart debate: 'That is not how kids grow', in Global News. 2019.
23. Hale, I., Improving Care for Patients with Obesity by Recognizing Weight Bias BCMJ, 2019. 61(5): p. 2.
24. de Onis, M., T.M. Wijnhoven, and A.W. Onyango, Worldwide practices in child growth monitoring. J Pediatr, 2004. 144(4): p. 461-5.
25. Rand, E.M.N., Examining the Use of the 2006 and 2007 World Health Organization Growth Charts by Family Physicians in British Columbia. 2010.
26. Hendrickson M, P.M., Three areas where our growth chart converstaions fall short- Room to grow. JAMA Pediatrics, 2022. 176(2): p. 123-124.
27. Paul, I.M., et al., Weight Change Nomograms for the First Month After Birth. Pediatrics (Evanston), 2016. 138(6): p. 1.
28. Bennett, W.E., et al., The Natural History of Weight Percentile Changes in the First Year of Life. JAMA pediatrics, 2014. 168(7): p. 681.
29. Cole, T.J., et al., Weight centile crossing in infancy: correlations between successive months show evidence of growth feedback and an infant-child growth transition. Am J Clin Nutr, 2016. 104(4): p. 1101-1109.
30. Barstow, C.M.D. and C.M.D. Rerucha, Evaluation of Short and Tall Stature in Children. American family physician, 2015. 92(1): p. 43-50.
31. Black, M.M. and F.E. Aboud, Responsive feeding is embedded in a theoretical framework of responsive parenting. J Nutr, 2011. 141(3): p. 490-4.
32. Thomson, T., et al., Waiting to be weighed: a pilot study of the effect of delayed newborn weighing on breastfeeding outcomes. Canadian nurse (1924), 2009. 105(6): p. 24.
33. Sachs, M., F. Dykes, and B. Carter, Feeding by numbers: an ethnographic study of how breastfeeding women understand their babies' weight charts. International breastfeeding journal, 2006. 1(1): p. 29-29.

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RELEVANT WARNINGS AND PRECAUTIONS:
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- Complex sleep behaviours
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12-month data

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- Month 12: Subjective **sleep onset** time (sSOL) from baseline was -30 minutes (5 mg; 2° endpoint).[2†]
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REFERENCES:

1. DAYVIGO Product Monograph, Eisai Limited, June 2023.
2. Data on file, Eisai Limited.

* Comparative clinical significance unknown.

† A 12-month multicentre, randomized, double-blind, Phase III study in 959 patients, 18 years and older with insomnia disorder, using patient sleep diaries, comprising a 6-month placebo-controlled treatment period followed by 6 months of active treatment. *Primary efficacy endpoint:* mean change from baseline in sSOL at the end of month 6. *Key secondary efficacy endpoints:* mean changes from baseline in sSE and sWASO during 12 month treatment period.

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Screening for Mercury Levels in the Perinatal Population

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ABSTRACT

What to ingest during pregnancy and while breastfeeding is always a priority topic (Food and Drug Administration, 2021). Northwestern Ontario (NWO) is home to beautiful terrain, including streams, rivers, and lakes which can provide nourishment to those living around them (Government of Canada, 2021). However, the nourishment provided by such areas, such as fish, contain certain naturally occurring levels of mercury that are then ingested (Food and Drug Administration, 2021). Northern communities are more at risk of elevated mercury levels due to the higher reliability of fish as a nutritional source and the ecosystems that they are within (Fournier, Karachiwalla, & Shah, 2021). Long-term mercury exposure can cause damage to the liver and kidneys (Fournier, Karachiwalla, & Shah, 2021). Given the fact that eating fish also has tremendous benefits (Taylor et al., 2022) and the idea of not eating fish is implausible, especially in certain cultures, the healthcare system needs to look at high mercury level prevention in vulnerable individuals. The descriptive study looked at how often primary care providers (PCPs) (family physicians, midwives, and nurse practitioners) screened for elevated mercury levels in their patients. The study took place in NWO from June 1st, 2023, to October 1st, 2023, using Qualtrics. It was found that 58% of PCPs either never ask their patients about fish consumption or sometimes ask about fish consumption and 86% have never ordered a blood mercury level on their perinatal patients. Barriers to such screening include it not coming up in conversation, language, not appearing to be worth discussing, having no guidelines, lack of knowledge, and unsure if fish consumption is relevant to discuss. The participants requested a screening pathway, more accessible means of fish consumption guides, and education seminars. These recommendations can assist PCPs in screening for mercury more efficiently in their patient population.

KEYWORDS: mercury levels, perinatal population, primary care providers, screening for mercury levels, pregnancy and fish, breastfeeding

Introduction

What to ingest during pregnancy and while breastfeeding is always a priority topic (Food and Drug Administration, 2021). Where one lives also has an impact on the available food sources for that individual (Government of Canada, 2021). Northwestern Ontario (NWO) is home to beautiful terrain, including streams, rivers, lakes, and mountains, all of which can provide nourishment to those living around them (Government of Canada, 2021). However, the nourishment provided by such areas, such as fish, contain naturally occurring levels of mercury that are then ingested (Food and Drug Administration, 2021). It is important to note that eating fish during pregnancy benefits the neurodevelopment of the fetus including the reduction in potential future allergies (Oken, 2022), which is why understanding the safety involving smart fish choices is critical for this population. Many fish consumption guidelines, including recommendations on the Canadian Government (2021) website mention fish found within the ocean and great lakes. This information is valuable, however, may not pertain to inland lakes found within the rural areas of the province, where many individuals live off the land and regularly eat fish (Food Guide Canada, 2022). Safe fish consumption should go hand in hand with understanding the dangers of mercury levels within the blood of perinatal individual. Mercury is passed through the placenta during pregnancy (Bonyata, 2018). Mercury is also transferred during breastfeeding, but on a lower level (Bonyata, 2018). Elevated mercury levels in a fetus or infant can have detrimental effects (Government of Canada, 2021). Many people in NWO consume fish regularly, and for some, this is a way of life (Government of Canada, 2021). Mercury levels are bio-accumulated within the host, therefore the timeline in which the individual has consumed fish needs to also be explored (Fournier, Karachiwalla, & Shah, 2021; Mahmoudi et al., 2020). It is suggested that long-term or habitual ingestion of mercury from fish also poses a very serious risk to fetal development (Oken, 2022). This habitual consumption concept is very concerning given NWO has many residents who rely on fish as a main source of food year-round (Food Guide Canada, 2020). Elevated mercury levels are on the rise in Canada, and even more so in remote areas (Government of Canada, 2021). The question then becomes, to what degree are we screening for potentially high mercury levels in perinatal individuals?

Background and Literature Review

Various studies have been conducted on the effects of elevated mercury levels in pregnancy and the detrimental effects it can have on the fetus (Bonyata, 2018; Ramirez et al., 2000). Other studies suggest that if the mercury level is only moderately elevated, that eating fish and obtaining the nutritional benefits outweigh the risk of exposure (Taylor et al., 2016, & Oken, 2022). The government of Canada outlines various gaps within the realm of mercury levels and fish consumption (Health Canada, 2007). The Canadian Government (2007) suggests the need for more information on mercury levels in Canadians to serve as an index of

potential exposure including the recommendation to survey demographics and socioeconomic information regarding fish consumption. These suggestions support the need to screen for potentially elevated mercury levels in pregnant and breastfeeding individuals of NWO. In 2011, the Canadian government conducted a biomonitoring initiative and found alarmingly high levels of mercury within the indigenous population (Stuart et al., 2011). Various fish consumption guidelines are available through reputable sources such as Canadian government websites, Food Guide Ontario, and the Guide to Eating Ontario Fish, however, some data is lacking, and it must be pointed out that mercury levels in fish vary from lake to lake and species to species (Bhavsar et al., 2011). It should also be noted that some correlation between silver/amalgam dental fillings and mercury exposure exist (Bonyata, 2018) and should be monitored if applicable. Greger (2012) recommends those contemplating becoming pregnant who eat fish should get tested for mercury given the increase of mercury found in fish such as tuna, however, there does not seem to be a follow-up to this American recommendation.

Rationale and Purpose

The Canadian government in partnership with Health Canada (2007) has an equation for exposure assessment and acceptable fish intake, however the main sources of fish and data for these equations do not include the popular fish species found within the inland lakes of NWO (Bhavsar et al., 2011). Mercury levels differ from lake to lake, and from fish to fish (Government of Canada, 2021), therefore it is difficult to simply rely on generic safe fish consumption guidelines. Mercury levels in specific fish species of the Great Lakes may differ from the levels found in smaller lakes within the same species of fish (Bhavsar et al., 2011). There are helpful resources such as the Guide to Eating Ontario Fish (Ontario, 2023), however, some lakes do not have data available. This can be attributed to the vast number of lakes within Ontario and the financial and human resource costs associated with surveying them. Clinicians are not expert in the mercury levels of lakes in their area, and therefore the responsibility of safe consumption lies in the hand of the individual ingesting the source. This, however, can be extremely difficult without access to the resources to determine what is safe and what is not, or if there is no current data available on that specific lake or species of fish. Given the fact that eating fish has tremendous benefits (Taylor et al., 2022) and the idea of not eating fish is implausible, especially in certain cultures, the healthcare system needs to look at high mercury level prevention and promotion of safe consumption in assisting vulnerable individuals.

Health Canada (2022) suggests that a safe level of mercury within the body is under 20 ng/mL and 8 ng/mL for pregnant individuals or those under 18 years of age. In New York it is suggested that a safe mercury level is under 5 ng/mL and anything higher must be reported to the health authorities (New York State Health Department, 2018). However, unless one is tested specifically for mercury, these values would remain unknown. There is a gap in the literature surrounding the need for screening of high mercury levels in pregnant and breastfeeding individuals within NWO. A fetus shares the same level of mercury as the mother, whereas that value is cut down to 1/3 when breastfeeding (Bonyata, 2018). Although there does not seem to be a large transference amount through breast milk, it should still be explored (Bonyata, 2018). Based on the Canadian acceptable levels, transference through breast milk to a baby of mercury levels above 30 ng/mL would be significant, or 15 ng/mL if looking at the New York State guidelines (Health Canada, 2007; New York State Health Department, 2018). The notion of randomly testing everyone for mercury is unrealistic and unfeasible therefore proper screening of individuals should be conducted prior.

Research Question

Are primary care providers (PCPs) and midwives screening for potentially high levels of mercury in their antenatal and postpartum (breastfeeding) patients?

Research Method

The purpose of this study is to explore the extent to which PCPs of NWO are screening for levels of mercury in their antenatal and postpartum breastfeeding patients.

Methodology

The objective of this descriptive study was to determine how often PCPs are screening for high mercury levels, their current knowledge level on *The Guide to Eating Fish in Ontario*, and what (if any) resources would be beneficial to their learning in regard to assisting them in such screening and to support the clinicians/bring awareness to the implications high mercury levels have on their perinatal patients.

Participant Selection & Recruitment

A total of 28 participants were recruited via a virtual flyer that encompassed the inclusion criteria (PCP within NWO) and exclusion criteria (any other healthcare professional outside the NWO jurisdiction). The participants self-screened and were able to click on the survey link that was embedded within the flyer. Consent was gathered through the survey itself in which the participants either consented and commenced the survey or were able to decline. The flyer was disseminated to key stakeholders, social media platforms for PCPs, and from colleague to colleague.

Instrumentation & Software

A virtual flyer was used to promote the study and obtain participants. A survey was utilized with 16 questions, 2 being questions regarding the participant's demographics (type of provider and region). The survey platform was conducted using Qualtrics. Data analysis was also conducted using Qualtrics data analysis software.

Deliverables and Topics

1) A determination of how often/if primary care providers and midwives are screening for potentially elevated mercury levels in their patients.
2) A determination of how often/if PCPs are ordering mercury levels on their patients.
3) A determination of what type of education regarding elevated mercury levels and screening material, if any, would be beneficial for PCPs.

Significance

Considering the many lakes, rivers, and streams within NWO and the reliance on these bodies of water for nutritional needs, it is important to screen for potential increased mercury levels in the perinatal populations. Many exposures to mercury occur through eating fish (Fournier, Karachiwalla, & Shah, 2021). People in Northern areas, especially Indigenous populations in Canada, are vulnerable to high mercury levels (Fournier, Karachiwalla, & Shah, 2021). Northern communities are more at risk due to higher latitudes in these areas, the higher reliability of

fish as a nutritional source, and the ecosystems that are within (Fournier, Karachiwalla, & Shah, 2021). Long-term exposure over time to this mercury can cause damage to the liver and kidneys (Fournier, Karachiwalla, & Shah, 2021). This is especially significant to NWO as Canadian Indigenous populations have higher rates of, or risk factors that contribute to chronic kidney disease (CKD) (Komenda et al., 2016). Some risk factors include an increased risk of diabetes, metabolic syndrome, and immune-mediated kidney diseases (Komenda et al., 2016). Another significant impact is the large increase in rural Indigenous populations of kidney failure which requires dialysis (Komenda et al., 2016). The damaging effects on the kidneys of mercury exposure and the increased prevalence of kidney problems can significantly affect the health of NWO populations. According to Taylor and colleagues (2016), high levels of mercury can lead to neurological issues such as neuromuscular alterations, memory loss, renal, and thyroid disorders. In the perinatal population, it is significant because mercury crosses the placenta and if the mother has elevated levels, the fetal levels are higher than the mother's (Taylor et al., 2016). When fetuses are exposed to excessive mercury, it has been associated with microcephaly, blindness, and other physical disabilities (Taylor et al., 2016).

Results

The study took place from June 1, 2023, to October 1, 2023, with a total of 28 participants. Of the 28 participants, 59% were physicians or nurse practitioners, and 41% were midwives. Of the 28 participants, 78% identified as being from the Northwest Local Health Integration Network (LHIN), and 22% were from the Northeast LHIN.

Data Collection & Analysis

Data was collected using the Qualtrics survey platform from June 1, 2023, to October 1, 2023. Data analysis was conducted using Qualtrics CoreXM analysis software.

Results

It was identified that many PCPs were not familiar with the *Guide to Eating Ontario Fish*. 8% of respondents were very familiar with using this resource. In contrast, 39% of respondents were not familiar with this guide. 23% were moderately familiar and 31% were slightly similar with the guide. Another significant result was that 69% of healthcare providers never refer to the *Guide to Eating Ontario Fish*. Not one PCP always refers to the guide, 26.92% sometimes refer to it, and only one stated they use the guide most of the time. The most common barrier to PCPs reference to this guide was a lack of knowledge of the guide and how to use it. Other barriers mentioned include "not being a part of routine topics list" and "it does not come to mind and the clinic is often busy".

Regarding asking their antenatal patients about fish consumption, 29% of PCPs never asked whether they eat fish and or how much they consumed. Of the respondents, 29% sometimes asked about fish consumption, 11% asked about half the time, and another 11% asked most of the time. Only one provider always asked about fish intake. There are many barriers to discussing fish consumption that the participants identified. These barriers included that it did not come up in conversation, language barriers, that it does not appear to be worth discussing, a lack of guidelines, a lack of knowledge, and being unsure if fish consumption is relevant to discuss.

It was also found that 82% of participants never ordered blood work on mercury levels, and only 7% sometimes ordered blood work. There was not one primary care provider that always checked mercury levels. With respect to antenatal patients, 86% of respondents never ordered mercury blood tests and only 3.5% sometimes ordered blood work. The PCPs also reported that 79% of them are not at all confident with reading and interpreting mercury levels. Only three PCPs reported being somewhat confident. No PCP who answered the survey was confident with analyzing high mercury levels. Some barriers that prevent these PCPs from ordering blood work include not knowing when to order these levels or how to interpret the levels, a lack of resources to draw blood, that they felt it was not within their scope, and not having recommendations to do so.

A barrier to mercury screening is that it did not come up in conversation. The participants were asked what education or resources would be beneficial to help them screen for and identify elevated mercury levels. Some useful resources that were suggested included in-service education, lunch and learn presentations, handout, development of a screening pathway or guideline, a medical directive to order mercury-level blood work, and an educational webinar. From these results, specific recommendations have been noted. The participants feel knowledge of mercury testing is viable, but more education and awareness are needed. The following section will discuss recommendations and limitations of the study.

Limitations

Access to this study was limited to PCPs who had access to the flier. The study was voluntary in nature with no incentive to participate other than bringing awareness to the topic. During the period in which data was collected, a news article relating mercury exposure to attempted suicide in children and youth was released, on July 19, 2023 (DeFlaviis, 2023). Prior to publication of the Grassy Narrows article 25 participants participated in the study, a participant engagement rate of 0.6 participants per day. After the Grassy Narrows article was published, the participant engagement rate dropped to 0.04 participants per day. The article focused on Indigenous individuals from Grassy Narrows and Wabaseemoong reserves who were exposed to mercury waste that was dumped into the surrounding river system (Fournier, Karachiwalla, & Shah, 2021). As this event negatively impacted individuals in NWO, it is important to note this circumstance and consider the limitation it created for this study, as healthcare providers may have chosen to not participate in the survey due to possible negative implications. In terms of attrition, One participant dropped out of the study, while another only provided some information. Other limitations include the small sample size, although a wide geographic range was surveyed.

Recommendations

There are several recommendations that can flow from this study. First, a screening pathway would be beneficial giving healthcare professionals a specific guide to screening for mercury, providing guidance on when to screen and order levels, and how to interpret the levels. A second recommendation would be to make mercury a standardized test. The current perinatal screening form has other categories where mercury could be easily incorporated, and this could incorporate asking about fish intake. The participants mentioned that education on mercury screening could be done via an in-service presentation or lunch and learn. Lastly, expanding the scope of midwives in Ontario would be beneficial to the patient and the healthcare system itself (reducing duplication of service providers being involved).

Conclusion

The health effects associated with elevated mercury levels can have a serious and chronic impact on the individual or fetus. Our PCPs in NWO are well-positioned to monitor and screen for such a toxin, however they have mentioned barriers preventing them to do so. A screening pathway, more accessible fish consumption guides, and education on the subject would assist PCPs in screening for mercury more efficiently in their patient population.

Role of the Researcher & Ethics — The primary researcher works at Confederation College in the School of Health, Negahneewin and Community Services, and the secondary researcher is a Nursing Student at Lakehead University in Collaboration with Confederation College. Ethics approval was obtained through the researcher's academic institution's Research Ethics Board (#0113). There are no conflicts to note. Confidentiality and anonymity of the participants were maintained throughout the study.

Arnarson, A. (2017). Is Eating Raw Fish Safe and Healthy? Healthline: nutrition. https://www.healthline.com/nutrition/eating-raw-fish?utm_source=ReadNext#TOC_TITLE_HDR_2

Baldewsingh GK, Wickliffe JK, van Eer ED, Shankar A, Hindori-Mohangoo AD, Harville EW, Covert HH, Shi L, Lichtveld MY, Zijlmans WCWR. Prenatal Mercury Exposure in Pregnant Women from Suriname's Interior and Its Effects on Birth Outcomes. International Journal of Environmental Research and Public Health. 2020; 17(11):4032. https://doi.org/10.3390/ijerph17114032

Bhavsar, S. P., Awad, E., Mahon, C. G., & Petro, S. (2011). Great Lakes fish consumption advisories: is mercury a concern? Ecotoxicology, 20(7), 1588-98. https://doi.org/10.1007/s10646-011-0731-0

Biron Health Group. (2023). Prenatal Mercury Screening. https://www.biron.com/en/glossary/mercury/

Bonyata, K. (2018). Breastfeeding and Mercury Exposure. Kelly Mom. https://kellymom.com/bf/can-i-breastfeed/chemicals/mercury/

Brown, M. (2018). Should You Avoid Fish Because of Mercury? Healthline: nutrition. https://www.healthline.com/nutrition/mercury-content-of-fish

Centers for Disease Control and Prevention. (2017). National Biomonitoring Program: mercury factsheet. https://www.cdc.gov/biomonitoring/Mercury_FactSheet.html

College of Nurses of Ontario (CNO). (2023). Nurse Practitioners. https://www.cno.org/en/learn-about-standards-guidelines/educational-tools/nurse-practitioners/

College of Nurses of Ontario (CNO). (2021). Practice Standard : Nurse Practitioner. https://www.cno.org/globalassets/docs/prac/41038_strdrnec.pdf

Dack K, Fell M, Taylor CM, Havdahl A, Lewis SJ. Mercury and Prenatal Growth: A Systematic Review. International Journal of Environmental Research and Public Health. 2021; 18(13):7140. https://doi.org/10.3390/ijerph18137140

DeFlaviis, S. (2023, July 19). "we're in an emergency": Mercury exposure linked to high youth suicide attempt rate in Grassy Narrows First Nation. CTVNews. https://www.ctvnews.ca/health/we-re-in-an-emergency-mercury-exposure-linked-to-high-youth-suicide-attempt-rate-in-grassy-narrows-first-nation-1.6486120

Food and Drug Administration. (2021). Advice About Eating Fish. U.S. Food and Drug Administration. https://www.fda.gov/media/102331/download

Food Guide Canada. (2020). Canada's Food Guide. https://food-guide.canada.ca/en/

Fournier, B., Karachiwalla, F., & Shah, C. P. (2021). Shah's public health and Preventive Health Care in Canada. Elsevier Canada.

Greger, M. (2012). Mercury Testing recommended Before Pregnancy. Nutrition Facts. https://nutritionfacts.org/2012/07/27/mercury-testing-recommended-before-pregnancy/

Health Canada. (2007). Bureau of Chemical Safety Food Directorate Health Products and Food Branch Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Government of Canada.

Health risk feared in high fish mercury levels. (1985, September 20). Globe & Mail [Toronto, Canada], 16. https://link.gale.com/apps/doc/A165571598/OVIC?u=minn4020&sid=ebsco&xid=4cce213b

Hibbeln, J., Gregory, S., Iles-Caven, Y., Taylor, C. M., Emond, A., & Golding, J. (2018). Total mercury exposure in early pregnancy has no adverse association with scholastic ability of the offspring particularly if the mother eats fish. Environment international, 116, 108–115. https://doi.org/10.1016/j.envint.2018.03.024

Holland, K. (2019). Mercury Detox: Separating Fact from Fiction. Healthline: toxicity. https://www.healthline.com/health/mercury-detox

Hopkins, J. (2021). Sault angler says you shouldn't eat smelts from Lake Superior. Here's why. Sootoday. https://www.sootoday.com/local-news/sault-angler-says-you-shouldnt-eat-smelts-from-lake-superior-heres-why-3581088

Komenda, P., Lavallee, B., Ferguson, T. W., Tangri, N., Chartrand, C., McLeod, L., Gordon, A., Dart, A., & Rigatto, C. (2016). The Prevalence of CKD in Rural Canadian Indigenous Peoples: Results From the First Nations Community Based Screening to Improve Kidney Health and Prevent Dialysis (FINISHED) Screen, Triage, and Treat Program. American Journal of Kidney Diseases, 68(4), 582–590. https://doi.org/10.1053/j.ajkd.2016.04.014

Mahmoudi, N., Jonidi Jafari, A., Moradi, Y., & Esrafili, A. (2020). The mercury level in hair and breast milk of lactating mothers in Iran: a systematic review and meta-analysis. Journal of environmental health science & engineering, 18(1), 355–366. https://doi.org/10.1007/s40201-020-00460-5

Mattison, C. A., Lavis, J. N., Hutton, E. K., Dion, M. L., & Wilson, M. G. (2020). Understanding the conditions that influence the roles of midwives in Ontario, Canada's health system: an embedded single-case study. BMC Health Services Research, 20. https://doi.org/10.1186/s12913-020-5033-x

Nawrocka, A., Durkalec, M., Szkoda, J., Filipek, A., Kmiecik, M., Żmudzki, J., & Posyniak, A. (2020). Total mercury levels in the muscle and liver of livestock and game animals in Poland, 2009–2018. Chemosphere, 258, 127311. https://doi.org/10.1016/j.chemosphere.2020.127311

New York State Health Department. (2018). Understanding Mercury Exposure Levels. https://www.health.ny.gov/environmental/chemicals/mercury/docs/exposure_levels.htm

Oken, E. (2022). Fish consumption and marine omega-3 fatty acid supplementation in pregnancy. Up to Date.

Ontario. (2023). Guide to eating fish Ontario. https://www.ontario.ca/page/guide-eating-ontario-fish

Patel, N., Xu, Y., McCandless, L. et al. Very low-level prenatal mercury exposure and behaviors in children: the HOME Study. Environ Health 18, 4 (2019). https://doi.org/10.1186/s12940-018-0443-5

Ramirez GB, Cruz MC, Pagulayan O, Ostrea E, Dalisay C. (2000). The Tagum study I: analysis and clinical correlates of mercury in maternal and cord blood, breast milk, meconium, and infants' hair. Pediatrics. 2000 Oct;106(4):774-81. doi: 10.1542/peds.106.4.774. PMID: 11015522.

Niño-Rodríguez, N.; Manrique Andrade, M.M.; Perez-Castiblanco, D.M.; Geney, C.A.; Castro Aguilar, D.P.; Ruíz, A.; Téllez, A.M.; Hernández-Florez, L.J.; Bociga, O.A.; Groot de Restrepo, H.; Narváez, D.M. Prenatal Mercury Exposure and Postnatal Outcome: A Case Series in Bogotá, Colombia. Preprints 2019, 2019090081 (doi: 10.20944/preprints201909.0081.v1).

Stuart Wuttke, Elsa LaCorte, Diego Garcia, and Maria Ooi. First Nations Biomonitoring Initiative: National Results (2011). Assembly of First Nations, 2013. Print.

Taylor, C. M., Golding, J., & Emond, A. M. (2016). Blood mercury levels and fish consumption in pregnancy: Risks and benefits for birth outcomes in a prospective observational birth cohort. International Journal of Hygiene and Environmental Health, 219(6), 513–520. https://doi.org/10.1016/j.ijheh.2016.05.0Q4

Ye et al. Annals of Occupational and Environmental Medicine (2016) 28:5 DOI 10.1186/s40557-015-0086-8

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† According to pooled data from two pivotal phase 3, open-label, single-arm, multicenter studies: Study 302 conducted at 77 sites across the United States and Canada and Study 301 conducted across 69 sites in Europe and Russia. In both studies, NEXTSTELLIS was supplied via oral administration, once daily as 24 active tablets followed by 4 inert tablets (4-day hormone-free interval) for 13 consecutive cycles. The primary efficacy endpoint was the number of on-treatment pregnancies assessed by the Pearl Index PI in the ITT Population of women aged 16 to 35 years (n=1864) in Study 302 and 18 to 35 years (n=1553) in Study 301.

‡ Clinical significance is unknown.

§ Studies conducted in healthy pre-menopausal women (16-50 years of age) with a duration of study at least three 28-day cycles and included the dosage and regimen of NEXTSTELLIS (E4/DRSP 15/3 mg, 24/4). The safety analysis included safety data from 3,790 subjects, of which a total of 3,575 subjects was confirmed treated. The safety population (N=3,790) also included 215 subjects who were dispensed study medication, but for whom the actual intake of study medication was not confirmed.

ITT: intent-to-treat; B/S: bleeding and/or spotting.

NEXTSTELLIS SAFETY INFORMATION[1]

Clinical use:

- Safety and efficacy have been studied in women between 16 and 50 years old. No data in women under 16 are available. Use of this product before menarche is not indicated.
- No geriatric data are available. Not authorized for use in women over 50 years of age. NEXTSTELLIS is not indicated for use in postmenopausal women.

Contraindications:

- NEXTSTELLIS is contraindicated in patients
  - who are hypersensitive to this drug or to any ingredient in the formulation, including any non-medicinal ingredient, or component of the container
  - who have a history of or actual thrombophlebitis or thromboembolic disorders
  - who have severe or multiple risk factor(s) for arterial or venous or thrombosis, such as hypertension, hereditary or acquired predisposition for venous or arterial thrombosis, such as Factor V Leiden mutation and activated protein C (APC-) resistance, antithrombin-III-deficiency, protein C deficiency, protein S deficiency, hyperhomocysteinemia and antiphospholipid-antibodies (anticardiolipin antibodies, lupus anticoagulant) and prothrombin mutation G20210A, severe dyslipoproteinemia, diabetes mellitus with vascular involvement, increasing age, particularly above 50 years, obesity, other medical conditions associated with venous thromboembolism (VTE) or other adverse vascular events, positive family history (arterial thromboembolism [ATE] in a sibling or parent especially at relatively early age, e.g., below 50), prolonged immobilization, major surgery, any surgery to the legs or pelvis, neurosurgery, or major trauma, and smoking, particularly in women who are over 35 years of age
  - who have a history of or actual cerebrovascular disorders
  - who have a history of or actual myocardial infarction or coronary artery disease and valvular heart disease with complications
  - who have a history of or actual prodromi of a thrombosis (e.g., transient ischaemic attack, angina pectoris)
  - who have active liver disease, hepatic dysfunction or history of or actual benign or malignant liver tumours
  - who have known or suspected carcinoma of the breast, carcinoma of the endometrium or other known or suspected estrogen-dependent neoplasia
  - who have undiagnosed abnormal vaginal bleeding
  - who have steroid-dependent jaundice, cholestatic jaundice, history of jaundice of pregnancy
  - who have any ocular lesion arising from ophthalmic vascular disease, such as partial or complete loss of vision or defect in visual fields
  - with known or suspected pregnancy
  - with current or history of migraine with focal aura
  - with a history of or actual pancreatitis if associated with severe hypertriglyceridaemia
  - who have renal or adrenal insufficiency

Most serious warnings and precautions:

Cardiovascular: Cigarette smoking increases the risk of serious cardiovascular events associated with the use of hormonal contraceptives. This risk increases with age, particularly in women over 35 years of age, and with the number of cigarettes smoked. For this reason, NEXTSTELLIS should not be used by women who are over 35 years of age and smoke.

Sexually transmitted infections (STIs): Patients should be counselled that birth control pills do not protect against STIs including HIV/AIDS. For protection against STIs, it is advisable to use latex or polyurethane condoms in combination with birth control pills.

Other relevant warnings and precautions:

- **Patients should discontinue NEXTSTELLIS at the earliest manifestation of:**
  - **thromboembolic and cardiovascular disorders**
  - **conditions which predispose to venous stasis and to vascular thrombosis**
  - **visual defects- partial or complete**
  - **papilledema or ophthalmic vascular lesions**
  - **severe headache of unknown etiology or worsening of pre-existing migraine headache**
  - **increase in epileptic seizures**
- Women receiving daily, long-term treatment for chronic conditions or diseases with medications that may increase serum potassium should have their serum potassium level checked during the first treatment cycle.
- NEXTSTELLIS should not be used in patients with conditions that predispose to hyperkalemia (e.g., renal insufficiency, hepatic dysfunction, and adrenal insufficiency).
- Consider monitoring serum potassium concentration in high-risk patients who take a strong CYP3A4 inhibitor long-term and concomitantly.
- Women who currently have or have had breast cancer should not use NEXTSTELLIS because breast cancer is a hormonally-sensitive tumour.
- Increased risk for arterial thromboembolism (myocardial infarction) or for cerebrovascular accident (e.g.,transient ischaemic attack, stroke). Arterial thromboembolic events may be fatal.
- The use of any COC carries an increased risk of VTE compared with no use – this risk is highest during the first year a woman ever uses a COC or restarts the same or a different COC.
- For women with multiple risk factors for VTE and ATE: If a woman has more than one risk factor, it is possible that the increase in risk is greater than the sum of the individual factors – in this case her total risk should be considered.
- Diabetic patients, or those with a family history of diabetes, should be observed closely to detect any worsening of carbohydrate metabolism.
- Alternative contraception should be used in women with severe dyslipoproteinemia.
- Worsening of Crohn's disease and ulcerative colitis has been reported during combined oral contraceptive (COC) use.
- Persistent irregular vaginal bleeding requires assessment to exclude underlying pathology.
- Patients with fibroids (leiomyomata) should be carefully observed.
- Acute or chronic disturbances of liver function may necessitate the discontinuation of COC use until markers of liver function return to normal.
- Risk of oral contraceptive-related cholestasis. NEXTSTELLIS should be discontinued if jaundice develops.
- Caution is warranted when starting therapy with the Hepatitis C virus (HCV) combination drug regimen ombitasvir, paritaprevir, ritonavir, with or without dasabuvir.
- Patients taking oral contraceptives have a greater risk of developing gallbladder disease requiring surgery within the first year of use. The risk may double after four or five years.
- In women with hereditary angioedema, exogenous estrogens may induce or exacerbate symptoms.
- Before oral contraceptives are used, a thorough history and physical examination should be performed, including a blood pressure determination and the family case history carefully noted. Disturbances of the clotting system must be ruled out if any members of the family have suffered from thromboembolic diseases (e.g., deep vein thrombosis, stroke, myocardial infarction) at a young age and breasts, liver, extremities, and pelvic organs should be examined and a Papanicolaou (PAP) smear should be taken if the patient has been sexually active. The first follow-up visit should be done 3 months after oral contraceptives are prescribed, and at least once a year, or more frequently if indicated thereafter. Follow-up visit examinations should include those procedures that were done at the initial visit as outlined above or per recommendations of the Canadian Task Force on the Periodic Health Examination. Serum potassium concentration should be monitored in high-risk patients who take a strong CYP3A4 inhibitor long-term and concomitantly.
- The onset or exacerbation of migraine or the development of headache of a new pattern that is recurrent, persistent, or severe, requires discontinuation of COCs and evaluation of the cause.
- With use of COCs, there have been reports of retinal vascular thrombosis which may lead to partial or complete loss of vision.
- There is an increased risk of thromboembolic complications in COC users after major surgery.
- Patients with a history of emotional disturbances, especially the depressive type, may be more prone to have a recurrence of depression while taking oral contraceptives.
- Hormonal contraceptives may cause some degree of fluid retention.
- During the first months of use, irregular spotting or bleeding may occur.
- Chloasma may occasionally occur in women who take COCs, especially in women with a history of chloasma gravidarum.
- If pregnancy occurs while taking NEXTSTELLIS, further intake must be stopped.
- The use of COCs should not be recommended until the breast-feeding mother has completely weaned her child and an alternative contraceptive method should be advised to women wishing to breastfeed.
- The safety and efficacy of NEXTSTELLIS in women with a body mass index (BMI) >35 kg/m^2 has not been evaluated.

For more information:

Please consult the Product Monograph at pdf.hres.ca/dpd_pm/00060352.PDF for important information relating to adverse reactions, drug interactions, and dosing information which have not been discussed in this piece. The Product Monograph is also available by calling us at 1-855-331-0830.

References: 1. NEXTSTELLIS Product Monograph, Searchlight Pharma Inc. March 5, 2021. **2.** Searchlight Pharma Inc. Data on File. 2024.

SEARCHLIGHT PHARMA

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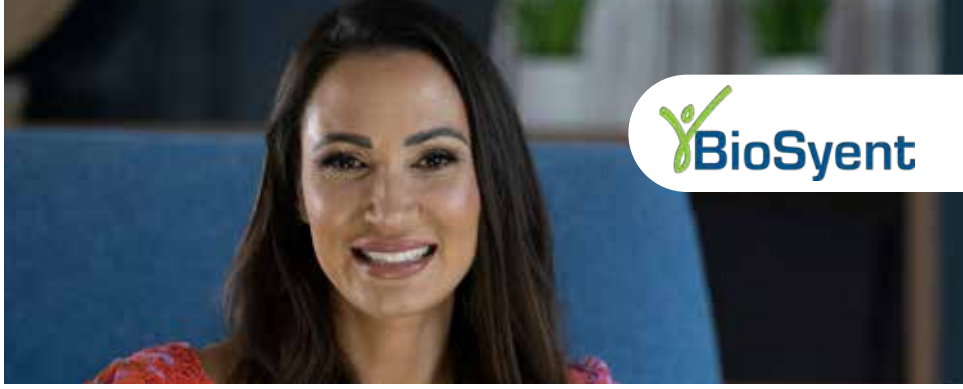

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Nurse Practitioners Make Primary Care Accessible in New Brunswick

Amy McLeod, RN BN, MHS, ENC, GNC
COO, CNO eVisitNB

ABSTRACT

The virtual care model implemented by eVisitNB has helped to reduce the pressures on the healthcare system in New Brunswick. as eVisitNB continues to grow, NPs from across the country are encouraged to contact eVisitNB and find out more about opportunities to virtually treat patients in New Brunswick.

In the spring of 2022, the New Brunswick Department of Health was highly concerned with patients' wait times in provincial emergency rooms. The ongoing shortage of family doctors, coupled with COVID-19 impacts on the healthcare system, resulted in record volumes of patients trying to access primary healthcare through provincial hospitals.

To reduce emergency room visits, the Department of Health implemented a virtual care option and partnered with New Brunswick-based eVisitNB to offer patients an alternative way to access primary care.

Using nurse practitioners as the company's primary source of healthcare providers, eVisitNB has helped to significantly reduce the pressures on the healthcare system, with daily patient virtual consults more than doubling during 2022.

This rapid growth required the company to quickly increase the number of nurse practitioners treating patients on the eVisitNB platform, and a new recruitment process focused on Nurse Practitioners from outside New Brunswick was launched.

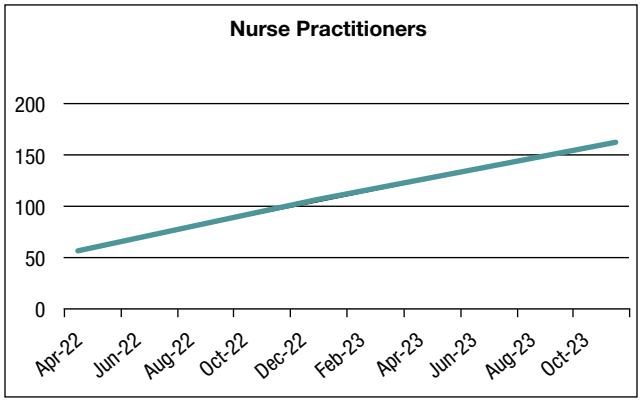
Understanding that healthcare professionals are already in high demand from traditional healthcare providers, the company uses a novel approach by allowing nurse practitioners to see patients when and where they want. By providing a platform for on-demand services, nurse practitioners can treat patients on a full or part-time basis, morning, noon, or night, weekday or weekend – it is entirely up to the NP.

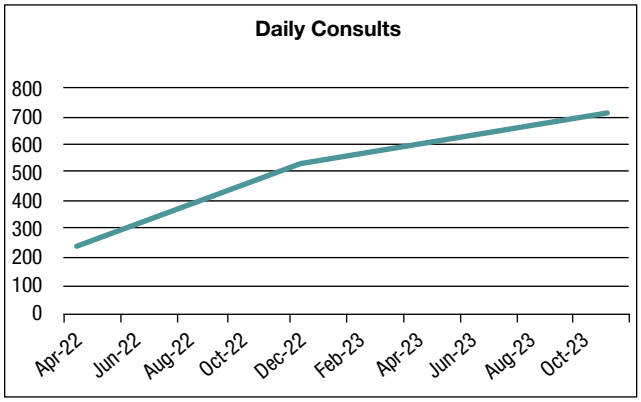
The model we use provides nurse practitioners with the full freedom to work as much as they want when they want. We know these professionals are extremely busy already, but our model at eVisitNB gives them the flexibility to use eVisitNB as a main source of income or log just a few hours each week when they have time.

This approach requires a significant number of nurse practitioners, but eVisitNB's national recruiting has allowed the company to grow its roster of NPs from outside New Brunswick to where they represent over two-thirds of the total. This approach solves another healthcare issue by allowing providers from anywhere in the country to optimize their time and see patients more efficiently.

eVisitNB continues to grow as it now sees over 700 patients daily. The constant growth means the company continues to recruit Nurse Practitioners from across the country. We are consistently looking to bring Nurse Practitioners onto the platform as more and more patients use eVisitNB for their healthcare requirements. The process requires licencing with the Nurses Association of New Brunswick and a short onboarding period, after which nurse practitioners can be treating patients from the comfort of their own home.

For more information about eVisitNB or the opportunity to join our team, visit www.eVisitNB.ca or email us at info@evisitNB.ca.





Sudden Sensorineural Hearing Loss: A Case Study and Pilot Project

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ABSTRACT

Sudden hearing loss is considered a medical emergency that involves a sudden decrease in hearing in one or both ears. Sudden Sensorineural Hearing Loss (SSNHL) is a sensorineural hearing loss of at least 30 dB HL at three consecutive frequencies over a period of 72 hours. Diagnosis and treatment should not be delayed; an audiometric assessment and referral to an otolaryngologist will significantly increase the likelihood of recovery when appropriate. This paper offers a case study and resources for primary care health professionals to differentiate the type of hearing loss observed and obtain a referral as soon as possible for an audiological assessment to confirm SSNHL.

Introduction

Sudden sensorineural hearing loss (SSNHL) is a serious medical condition that requires timely collaboration between audiologists and practitioners to reduce the likelihood of permanent adverse otologic outcomes. SSNHL is defined, at a minimum, to be a sensorineural hearing loss of at least 30 dB HL at three consecutive frequencies over 72 hours (Chandrasekhar et al., 2019). Other symptoms that frequently present with SSNHL include tinnitus, vertigo, inability to localize sound and aural fullness (Stachler et al, 2012; Han et al, 2023). Patients with SSNHL who receive inappropriate or no treatment can experience long-term effects such as a reduction in speech recognition, comprehension and even social isolation (Carlsson et al., 2011). However, if appropriate treatment is administered expediently, hearing may be partially restored (Stachler et al., 2012). Occasionally, SSNHL may also be misdiagosed with otitis media because aural fullness is one of the most common symptoms reported (Leung et al. 2016).

The severity of sudden hearing loss at presentation is directly proportional to the likelihood of recovery (Conlin et al. 2007). Those with mild losses may obtain full recovery, whereas those with severe to profound loss are less likely to recover fully. Other poor prognostic indicators are the presence of vertigo and age <15 years or >60 years (Rauch, 2008). The prognosis can still be good if SSNHL is treated appropriately within 7 days of symptom onset (87%) (Chandrasekhar et al, 2019). Unfortunately, for some, the time of sudden onset may be difficult to determine because hearing loss may have occurred while they were sleeping (Byl, n.d.), there was a lack of medical resources or hearing loss symptoms may have been overlooked by the patient (Coveli et al., 2018).

Currently, the prevalence of SSNHL in the USA is approximately 27 per 100,000. The number is higher as some individuals do not seek medical care regarding SSNHL if the degree of hearing loss is perceived as mild or it is uncertain to the person if medical intervention is necessary (Alexander & Harris, 2013). This prevalence has increased since 1984, when the incidence was cited as 5 to 20 per 100,000 (Byl, n.d.). The prognosis for hearing recovery often depends on many factors such as age, presence of vertigo, the audiogram configuration and severity of hearing loss (Kuhn et al, 2011).

Primary care health professionals may be reluctant to provide immediate treatment or refer for an urgent (i.e., within 24 hours) audiometric evaluation (Shilo et al., 2022) because of the overwhelming amount of data with regard to the management of SSNHL with various treatment protocols and possible spontaneous recovery without treatment (Schwam et al, 2022).

In 2019, the AAO-HNS (American Academy of Otolaryngology-Head and Neck Surgery) released a new guideline to improve the diagnostic accuracy of SSNHL, facilitate prompt intervention, decrease the number of variations in management, reduce unnecessary tests and/or imaging procedures, and improve hearing and rehabilitative outcomes for the affected population (Chandrasekhar et

al., 2019). When a patient first presents with sudden hearing loss, conductive hearing loss should be differentiated from sensorineural hearing loss via a tuning fork test and a referral made for an audiological assessment. (Chandrasekhar et al., 2019).

As per Ng et al., primary care practitioners are often the first professionals to see a patient with SSNHL, meaning it is essential for them to be aware of current practice trends and guidelines that are specific to the diagnosis and management of SSNHL. It is possible to use appropriate screening tools to identify sensorineural hearing loss in a way that does not take extensive time and financial investment. This can be initiated with tools such as Weber and Rhine, followed by a full audiometric assessment. Once a sudden sensorineural hearing loss is confirmed, the family practitioner proceeds with further medical intervention as soon as possible to reduce the possible long-term effects of SSNHL.

It is important to note that this paper is not intended to provide medical guidance to practitioners, but rather to offer a resource to help them confirm a SSNHL and provide a possible pathway for getting patients treatment as soon as possible. We hope that providing this resource and pathway may have the benefit of reducing the long-term effects of SSNHL. If more primary care providers are made aware of these screening tools and resources, a referral for an otolaryngology consult may be accomplished with greater speed at engaging in the recommended AAO-HNS guidelines (Stachler et al, 2012; Chandrasekhar et al., 2019).

Currently, some variance exists in the literature regarding spontaneous recovery from SSNHL in the absence of timely treatment (Ng et al., 2021). Although there are cases of spontaneous recovery, current best practices are to seek medical treatment as soon as possible (Chandrasekhar et al., 2019). The authors of this article are continually monitoring the ongoing research regarding spontaneous recovery and the challenges surrounding this heterogeneous group of patients.

Many primary care health providers are aware of this urgent nature of sudden sensorineural hearing loss; however, they may not be comfortable with treating SSNHL without first establishing the type of hearing loss (conductive/sensorineural/mixed) before starting treatment (Ng et al., 2021).

We contend that additional resources are needed to help primary healthcare providers use screening tools to rule out conductive hearing loss (CHL) versus Sensorineural Hearing Loss (SNHL) to start the appropriate medical intervention as soon as possible. The gold standard for diagnosing the type of hearing loss is a full audiometric evaluation (Stachler et al., 2012; Chandrasekhar et al., 2019). This must be done early to reduce the hesitation for appropriate treatment, and provide a baseline assessment of the patient's hearing (Ahmadzai et al., 2018).

In the absence of being able to obtain an immediate audiometric evaluation, screening tools such as the Rinne and Weber are cost-effective and safe to use to confirm which ear is affected by the sudden hearing loss and whether it is sensorineural. This will allow the care provider to track the patient's hearing, determine the next steps for treatment, and determine if the appropriate treatment is working or if salvage therapy should be considered (Chandrasekhar et al., 2019).

An otolaryngologist can be crucial in this process to achieve successful outcomes and to rule out other underlying pathology. However, support is needed in the meantime to provide resources to primary care providers in order to screen for the type of hearing loss, obtain a full diagnostic audiogram, and start treatment as soon as possible so an appropriate referral can be made to an otolaryngologist for further medical treatment. (Chandrasekhar et al., 2019)

A case study:

The following case study can offer primary care providers an example and encouragement that the prognosis for hearing recovery is possible when identification and treatment are made without delay.

A 42-year-old male contacted one of the authors, a registered audiologist, regarding concerns with his hearing on the morning of 23 June 2022. No history of previous hearing loss was confirmed. He reported left-sided facial numbness, aural fullness and left-sided constant tinnitus. He was seen the same day for a full audiological assessment and was referred to an otolaryngologist for further investigation. The referred otolaryngologist saw this patient on the same day of the referral. Initial test results were consistent with hearing within normal limits for the right ear and normal hearing to a mild sensorineural hearing loss for the left ear. Distortion Produce Otoacoustic Emissions (DPOAEs) were present for the right ear at all test frequencies 1.6 through 8.0 kHz and absent at most test frequencies for the left ear, which was consistent with audiometric findings. The Rhine and Weber screening tools were not used for this case, as a full audiometric assessment was done the same day by an audiologist.

A course of steroids (60mg per day) was started on the same day, 23 June 2022, for this individual for seven days. On the 6th day, the patient reported significant hearing recovery, and most of his symptoms had improved, apart from intermittent tinnitus for the left ear. The audiological assessment results demonstrated a significant improvement in hearing for the left ear and was consistent with hearing sensitivity within normal limits bilaterally.

Otoacoustic emissions were more robust and present compared to the first assessment six days prior. Given the recovery demonstrated, no further steroid treatment was necessary. Another audiological assessment was completed three months later to establish a new baseline of hearing sensitivity. This audiological assessment showed a further improvement with otoacoustic emissions for the left ear and a slight improvement in hearing thresholds again for the left ear.The patient reported he felt his hearing has recovered, with occasional difficulty hearing in noise and occasional left-sided tinnitus. Reports of aural fullness and facial numbness were also resolved. Communication and listening strategies were reviewed, along with tinnitus management options.

A final baseline is essential for monitoring hearing and ensuring that full recovery, in this case, has been met. It also gives the patient peace of mind that their hearing has been restored. If not recovered, then it provides a new baseline and an opportunity to discuss the importance of monitoring hearing along with other options that may be appropriate (Chandrasekhar et al., 2019).

The history behind tuning fork screening tools and how to support practitioners

The Rinne and Weber bedside screening tools are helpful in screening for SSNHL (Crowley et al, n.d.). Both tests utilize a tuning fork and are easy to administer. The Rinne test is used to determine whether a tone is louder by air conduction or bone conduction. When there is conductive hearing loss present, the tone is almost always louder by bone conduction, indicating that the air conduction route through the outer and middle ear is disrupted. When the tone is louder by air conduction, that indicates there is not likely a conductive problem. (Maty et al., 2020). The Weber test is a screening tool that can be used to determine whether or not a tuning fork placed in the centre of the forehead lateralizes to one ear or the other or if it seems to be equal among ears (non-lateralized). If there was no conductive hearing loss indicated by the Rhinne, then the ear that the tone lateralizes to is the one that is non-affect, and the other ear is to be suspected for SSNHL. (see audiologystat.com for information).

These screening tools are considered 'old school' in audiology because further developments have been made with technology that is far beyond a tuning fork. However, they are very valuable when it comes to quickly screening the type of loss and identification of which ear is affected (Abdullah et al., 2022). In addition, the low cost, high efficiency and high accuracy/reliability of the Rinne and Weber screening make the approach an ideal tool for practitioners. The sensitivity and specificity of the Weber tuning fork test can be as high as 78% and 99%, respectively. When the Weber test is combined with the Rinne test, the overall diagnostic accuracy improves (Abdullah et al. 2022; Shuman et al. 2013; Stankiewicz et al. 1979).

Importance of Audiometric Evaluation

In addition to the accessible hearing screening resource, primary healthcare providers also need quick and reliable access to a full audiometric workup, the gold standard of care for patients reporting sudden hearing loss. Audiologystat.com is a website developed recently to provide primary care practitioners, Emergency Room practitioners, nurse practitioners and medical residents a way to access a full audiological assessment for their patient within 48 hours. This website contains a brief summary of tuning fork tests to act as a resource to screen the patient regarding the type of hearing loss that is being demonstrated, in order for prompt medical treatment as soon as possible. As per a study by Lin et al, 2021, practitioners, who have been practicing for less than 5 years, all recognize that SSNHL is a medical emergency requiring urgent care. However, these researchers also determined is that few of these family practitioners use all possible resources to determine if the hearing loss is sensorineural or conductive. This reality supports the idea that easy-to-use, clear resources that are readily available are urgently needed to help family practitioners start appropriate treatment as soon as possible. Finally, the authors also stressed that a referral to an otolaryngologist was critical; however, due to the nature of healthcare in Canada, there may be a wait time for the patient to be seen by an otolaryngologist.

An audiometric evaluation as soon as possible is optimum to identify a SSNHL. A follow-up audiometric assessment is also critical once medical intervention has been made. In Alberta, a pilot program is being tested whereby a website with an urgent referral email is now available to practitioners to call to arrange an audiometric assessment within 48 hours. Given the current strain on the public healthcare setting and the side effects of the COVID-19 pandemic, it is more realistic for primary care practitioners to access private audiology clinics to obtain an audiometric evaluation as soon as possible. An email (audiologystat@gmail.com) is now launched for primary healthcare providers to email a referral form at any time, which will be processed, and an appointment for an audiometric evaluation will be made within 48 hours. Initially, this form is available to primary care providers such as family practitioners, emergency room practitioners, nurse practitioners and residents. Expansion to other professionals may be considered following the dissemination of feedback provided by the first group of primary healthcare providers.

Discussion

Given today's healthcare landscape and the aftermath of the COVID-19 pandemic, primary care providers are stretched to the limit for time (Hibscher et al, 2021). Resources that are easily accessible and efficient to administer by both themselves and their healthcare team (e.g., nurses, residents, etc.) are required. As such, we have created a free online resource for primary healthcare professionals to follow (audiologystat.com). This resource provides guidance on tuning fork placement, for which the SSNHL website can provide guidance. The website provides a quick overview of the Rhine and Weber assessment, in addition to information about the correct positioning of the tuning fork, which is essential when completing these tests (Butskiy et al, 2016). Further research is needed to determine and measure whether this resource is useful and if other resources are to be developed.

Audiologystat.com

A free online audiology resource for primary healthcare professionals

Abdullah SN, Zakaria MN, Salim R, Md Daud MK, Nik Othman NA. Comparing the diagnostic accuracy of audiometric Weber test and tuning fork Weber test in patients with conductive hearing loss. Laryngoscope Investigative Otolaryngology. 2022; 7(2): 523-529. doi:10.1002/lio2.747

Ahmadzai N, Kilty S, Wolfe D, Bonaparte J, Schramm D, Fitzpatrick E, Lin V, Cheng W, Skidmore B, Moher D, Hutton B. A protocol for a network meta-analysis of interventions to treat patients with sudden sensorineural hearing loss. Syst Rev. 2018 May 16;7(1):74. doi: 10.1186/s13643-018-0736-3. PMID: 29769117; PMCID: PMC5956787.

Alexander, T.H., Harris, J.P., 2013. Incidence of Sudden Sensorineural Hearing Loss. Otology & Neurotology, 34(9), p.1586–1589.

Butskiy, O., Ng, D., Hodgson, M., Nunez, D.A., 2016. Rinne test: Does the tuning fork position affect the sound amplitude at the ear? Journal of Otolaryngology - Head and Neck Surgery, 45(1).

Byl, F.M., SUDDEN HEARING LOSS_EIGHT YEARS' EXPERIENCE AND SUGGESTED PROGNOSTIC TABLE.

Carlsson PI, Hall M, Lind KJ, Danermark B. Quality of life, psychosocial consequences, and audiological rehabilitation after sudden sensorineural hearing loss. Int J Audiol. 2011 Feb;50(2):139-44. doi: 10.3109/14992027.2010.533705.

Chandrasekhar, S.S., Tsai Do, B.S., Schwartz, S.R., Bontempo, L.J., Faucett, E.A., et al, 2019. Clinical Practice Guideline: Sudden Hearing Loss (Update) Executive Summary. Otolaryngology–Head and Neck Surgery, 161(2), p.195–210.

Conlin AE, Parnes LS. Treatment of Sudden Sensorineural Hearing Loss: I. A Systematic Review. Arch Otolaryngol Head Neck Surg. 2007;133(6):573–581. doi:10.1001/archotol.133.6.573

Crowley, H., Kaufman, R.S., York, N., Rinne, A., The Rinne Tuning Fork Test, Available at: https://jamanetwork.com/.

Han, J. , Kwak, S. , Lee, J. , Lee, Y. , Kim, D. & Bae, S. (2023). Clinical Factors Associated With Prognosis of Tinnitus and Aural Fullness After Sudden Sensorineural Hearing Loss. Otology & Neurotology, 44 (5), 432-437. doi:10.1097/MAO.0000000000003853.

Hibscher, D., Oron, Y., Handzel, O., Warshavsky, A., Horowitz, G., et al, 2021. Validation of a smartphone-based Rinne test to detect an air-bone gap. European Archives of Oto-Rhino-Laryngology, 278(12), p.4767–4773.

Kuhn, M., Heman-Ackah, S.E., Shaikh, J.A., Roehm, P.C., 2011. Sudden Sensorineural Hearing Loss: A Review of Diagnosis, Treatment, and Prognosis. Trends Amplif, 15(3), p.91–105.

Leung, M. A., Flaherty, A., Zhang, J. A., Hara, J., Barber, W., & Burgess, L. (2016). Sudden Sensorineural Hearing Loss: Primary Care Update. Hawai'i Journal of Medicine & Public Health, 75(6), 172-174. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928516

Maty, S., Salana, K., Hage, R., 2020. The implications of variability in the instruction and practice of the Rinne test. Translational Research in Anatomy, 18, p.100053.

Ng B, Crowson MG, Lin V. Management of sudden sensorineural hearing loss among primary care physicians in Canada: a survey study. J Otolaryngol Head Neck Surg. 2021 Apr 1;50(1):22. doi: 10.1186/s40463-021-00498-x. PMID: 33795010; PMCID: PMC8015047.

Rauch SD. Clinical practice. Idiopathic sudden sensorineural hearing loss. N Engl J Med. 2008 Aug 21;359(8):833–40.

Schwam, Z.G., Wanna, G.B. Update on the Management of Idiopathic Sudden Sensorineural Hearing Loss. Curr Otorhinolaryngol Rep 10, 329–335 (2022). https://doi-org.login.ezproxy.library.ualberta.ca/10.1007/s40136-022-00414-5

Shilo, S., Ungar, O.J., Handzel, O., Abu Eta, R., Shapira, U., et al, 2022. Telemedicine for Patients With Unilateral Sudden Hearing Loss in the COVID-19 Era. JAMA Otolaryngology–Head & Neck Surgery, 148(2), p.166.

Shuman AG, Li X, Halpin CF, Rauch SD, Telian SA. Tuning Fork Testing in Sudden Sensorineural Hearing Loss. JAMA Intern Med. 2013;173(8):706–707. doi:10.1001/jamainternmed.2013.2813

Stachler, R.J., Chandrasekhar, S.S., Archer, S.M., Rosenfeld, R.M., Schwartz, S.R., et al, 2012. Clinical Practice Guideline. Otolaryngology–Head and Neck Surgery, 146(3_suppl), p.S1–S35.

Stankiewicz JA, Mowry HJ. Clinical accuracy of tuning fork tests. Laryngoscope. 1979 Dec;89(12):1956-63. doi: 10.1288/00005537-197912000-00009. PMID: 513917.

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PrTrintellix® (vortioxetine) is indicated for the treatment of MDD in adults.[1]

TRINTELLIX: Demonstrated efficacy data in MDD (Major Depressive Disorder) with an excellent tolerability profile[1-3]

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Demonstrated Efficacy

- **Demonstrated 60% improvement in depressive symptoms (MADRS total score)** from baseline at 8 weeks with TRINTELLIX 20 mg vs 37% with placebo (-18.8 vs -11.7; $p<0.0001$)[1,2†‡]
- **Demonstrated up to 87% improvement in overall function (SDS)** from baseline at 8 weeks with TRINTELLIX 20 mg vs placebo (-8.4 vs -4.5; $p=0.0005$)[2†‡]

Excellent Tolerability Profile

- No clinically meaningful effect demonstrated on body weight[1]
- Low incidence of self-reported sexual side effects demonstrated[1]
- No clinically significant effect demonstrated on ECG parameters[1]

The most commonly observed adverse events in patients with MDD treated with TRINTELLIX in 6- to 8-week placebo-controlled studies (incidence ≥5% and at least twice the rate of placebo) were nausea, constipation and vomiting.[1]

CANMAT=Canadian Network for Mood and Anxiety Treatments; ECG=electrocardiogram; MADRS=Montgomery-Åsberg Depression Rating Scale; MDD=major depressive disorder; SDS=Sheehan Disability Scale

† The starting and recommended dose of TRINTELLIX is 10 mg once daily for adults <65 years. See Product Monograph for complete dosing and administration information.

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vortioxetine

Clinical use:
Efficacy in providing symptomatic relief of MDD demonstrated in trials of up to 8 weeks' duration; efficacy in maintaining an antidepressant response demonstrated for up to 24 weeks.

Physicians who elect to use TRINTELLIX for extended periods should periodically re-evaluate the usefulness of the drug for individual patients.

The lowest effective dose of 5 mg/day should always be used as the starting dose in elderly patients (≥65 years of age).

Not indicated in patients <18 years of age.

Contraindication:

- Combined use with monoamine oxidase inhibitors (MAOIs)

Most serious warnings and precautions:

- **Potential association with behavioural and emotional changes, including self-harm:** Severe agitation-type events reported; rigorous clinical monitoring for suicidal ideation or other indicators of potential for suicidal behaviour is advised in patients of all ages; this includes monitoring for agitation-type emotional and behavioural changes.
- **Discontinuation symptoms:** Gradual reduction in dose, rather than abrupt cessation, is recommended.

Other relevant warnings and precautions:

- Dependence/tolerance
- Caution when driving or operating machinery
- Abnormal bleeding
- Potential for increased risk of postpartum hemorrhage
- Caution in moderate or severe hepatic impairment
- Bone fracture risk
- Caution in patients who have a history of seizures or in patients with unstable epilepsy
- Serotonin syndrome/neuroleptic malignant syndrome
- Cognitive and motor disturbances
- Angle-closure glaucoma
- Caution in patients with a history of mania/hypomania and discontinue use in any patient entering a manic phase
- Aggression/agitation
- Caution with concurrent use of electroconvulsive therapy (ECT)
- Hyponatremia
- Caution in patients with severe renal insufficiency
- Not recommended during breastfeeding
- Dosage adjustment in elderly patients

For more information:
Consult the Product Monograph at www.trintellixmonograph.ca for important information about contraindications, warnings, precautions, adverse reactions, interactions, dosing instructions and conditions of clinical use not discussed in this piece.

The Product Monograph is also available by calling 1-800-586-2325.

DSM-IV-TR=*Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, text revision; MADRS=Montgomery-Åsberg Depression Rating Scale; MDD=major depressive disorder; MDE=major depressive episode; SDS=Sheehan Disability Scale

* See guidelines for complete recommendations.
‡ Double-blind, fixed-dose, placebo-controlled study of 608 patients aged 18-75 years with a primary diagnosis of recurrent MDD according to DSM-IV-TR criteria, a current MDE >3 months' duration and a MADRS total score ≥26. Patients were randomized to TRINTELLIX 15 mg, 20 mg (10 mg/day during Weeks 1 and 15 or 20 mg/day from Weeks 2 to 8) or placebo for 8 weeks. Mean baseline MADRS total scores were 31.5 for placebo, 31.8 for TRINTELLIX 15 mg and 31.2 for TRINTELLIX 20 mg. Mean baseline SDS total scores were 19.8 for placebo, 20.6 for TRINTELLIX 15 mg and 20.7 for TRINTELLIX 20 mg. Mean baseline SDS work scores were 6.3 for placebo, 6.8 for TRINTELLIX 15 mg and 6.9 for TRINTELLIX 20 mg. Mean baseline SDS social scores were 6.8 for placebo, 6.9 for TRINTELLIX 15 mg and 6.8 for TRINTELLIX 20 mg. Mean baseline SDS family scores were 6.9 for placebo, 6.7 for TRINTELLIX 15 mg and 7.0 for TRINTELLIX 20 mg.

References: 1. TRINTELLIX Product Monograph. Lundbeck Canada Inc., August 4, 2021. **2.** Boulenger JP, *et al.* Efficacy and safety of vortioxetine (Lu AA21004), 15 and 20 mg/day: a randomized, double-blind, placebo-controlled, duloxetine-referenced study in the acute treatment of adult patients with major depressive disorder. *Int Clin Psychopharmacol* 2014;29(3):138-49. **3.** Mahableshwarkar AR, *et al.* A randomized, placebo-controlled, active-reference, double-blind, flexible-dose study of the efficacy of vortioxetine on cognitive function in major depressive disorder. *Neuropsychopharmacology* 2015;40(8):2025-37. **4.** Kennedy SH, *et al.* Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the management of adults with major depressive disorder: Section 3. Pharmacological treatments. *Can J Psychiatry* 2016;61(9):540-60.

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Current Topics

Three distinct phenotypes of Multiple Sclerosis identified by blood analysis

Multiple sclerosis (MS) is an autoimmune disease that presents with widely varied clinical presentations and rates of disease progression.

A recent paper analysed the blood and clinical symptoms of people with early MS to see if they could identify any subtypes of MS.

Based on the analysis of 2 longitudinal cohorts (n=309 and n=232) they were able to identify 3 distinct phenotypes with observed differences in disease progression and response to treatment named E1, E2 and E3.

Notably, the E1 subtype was associated with more severe disease, and higher disability. In this subgroup, there was also structural brain damage observed earlier in the disease trajectory.

The E3 subtype was associated with higher inflammatory disease activity and a greater number of brain lesions at baseline. Patients with this subtype were observed to have a higher relapse rate during the 1st year from baseline and more rapid disability accrual. People with E3 subtype had an increased frequency of being prescribed highly active disease-modifying therapies as their first immunomodulatory drug. Furthermore, it was observed that E3 subtype patients treated with an interferon-beta had higher disease progression compared to E3 patients treated with other therapies. These differential effects of interferon-beta were only seen in the E3 group.

Read the article:

https://www.science.org/doi/10.1126/scitranslmed.ade8560

Gross CC, et al., German Competence Network Multiple Sclerosis (KKNMS). Multiple sclerosis endophenotypes identified by high-dimensional blood signatures are associated with distinct disease trajectories. Sci Transl Med. 2024 Mar 27;16(740):eade8560. doi: 10.1126/scitranslmed.ade8560. Epub 2024 Mar 27. PMID: 38536936.

Study identifies most harmful, modifiable risk factors for dementia

There are specific higher-order areas of the brain that have been identified as being especially vulnerable to the ageing process including Alzheimer's Disease by degenerating earlier and faster than the rest of the brain.

In a recently published study from the UK, nearly 40,000 individuals received brain imaging as participants in the UK Biobank Study. The objective of this study was to identify modifiable risk factors and their impact on these vulnerable areas of the brain.

The study looked at over 160 modifiable risk factors and after accounting for age and sex the three most harmful were diabetes, traffic-related pollution and alcohol.

The negative impact of diabetes and alcohol consumption is consistent with prior studies which have shown both to be associated with cognitive and cerebral decline.

Read the article:

https://bmjopen.bmj.com/content/14/3/e067197

Manuello, J., Min, J., McCarthy, P. et al. The effects of genetic and modifiable risk factors on brain regions vulnerable to ageing and disease. Nat Commun 15, 2576 (2024).

A history of physicial exercise reduces the risk of insomnia symptoms and extreme sleep durations

A multi-centre European study looked at the relationship between a history physical activity and current symptoms of insomnia, daytime sleepiness and abnormally short or long sleep durations.

Researchers found that subjects who exercised regularly had less trouble getting to sleep, and were less likely to have a sleep duration of ≤ 6 hours a night or ≥ 9 hours a night. Regular exercise was defined as exercising 2 or more times a week for an hour per week or more.

Daytime sleepiness and problems maintaining sleep were not related to exercise status.

Read the article:

https://bmjopen.bmj.com/content/14/3/e067197

Manuello, J., Min, J., McCarthy, P. et al. The effects of genetic and modifiable risk factors on brain regions vulnerable to ageing and disease. Nat Commun 15, 2576 (2024).

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The Predicting Risk of Cardiovascular Disease Events (PREVENT) Calculator

The American Heart Association has updated its cardiovascular disease risk calculator. The **Predicting Risk of Cardiovascular Disease Events (PREVENT) calculator** is used for determining the chance of atherosclerotic cardiovascular disease and heart failure within a 10-30 year range for adults aged 30-79 with no known cardiovascular disease.

PREVENT includes traditional risk factors for cardiovascular disease such as smoking, cholesterol levels and blood pressure, as well as additional risk factors such as kidney and metabolic diseases. PREVENT, compared to the already existing Pooled Cohort Equations (PCEs), has sourced data from a larger and more diverse sample including data from both electronic health records and population research studies. The benefit of a larger sample size is as the sample grows in numbers and diversity the calculator becomes more accurate.

The PREVENT model factors cardiovascular-kidney-metabolic (CKM) health including adding estimated glomerular filtration rate, as well as urine albumin-to-creatinine ratio and hemoglobin A_{1c}. Albuminuria can be a prognostic marker for risk in those with kidney disease. The PREVENT calculator also factors in heart failure in the cardiovascular disease risk endpoint. Heart failure risk can also be calculated through PREVENT separately.

PREVENT highlights social determinants of health measured using the Social Deprivation Index and includes: education, employment, housing, transportation, and income. Another key difference between the existing models is PREVENTs removal of race as a risk factor (despite the increase in diversity of the sample). This could be beneficial in reducing discrimination in treatment and/or care.

Lead author Sadiya S. Khan, MD, MSc, has also noted that "the current guidelines still endorse the PCEs as the risk calculator of choice, but that clinicians are able to use other risk calculators, including PREVENT, when appropriate".

There are some potential issues with including electronic medical record data in the PREVENT model. Electronic medical data can be less reliable than clinical research data, however, upon observing the relationships between risk predictors and clinical outcomes, there were no significant differences found in the research or clinical care datasets.

Continuing research will include novel predictors and outcomes such as chronic kidney disease progression risk, subclinical cardiovascular disease risk factors, identifying social and individual determinants of health within a clinical practice, and interventional and implementation questions surrounding risk thresholds.

The goal, according to Dr Lloyd-Jones, is to make PREVENT as accessible and easy to use as possible. PREVENT aims to start a conversation surrounding risk earlier.

https://professional.heart.org/en/guidelines-and-statements/prevent-calculator

Key elements of the PREVENT scientific statement:

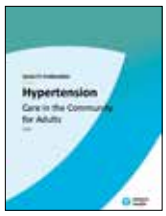
- Taking a holistic approach so that the calculator can be used by a wide range of clinicians
- Recommend clinicians begin screening for cardiovascular disease in patients at 30 years old and follow up with heart protective therapies if necessary.
- Begin long-term risk assessment at an earlier age. The 10-year risk factor for cardiovascular heart disease in 30-year-olds is typically <1%, however, the 30-year risk factor could be high so assessing long-term risk beginning at a younger age is key.

1. Larkin H. What to Know About PREVENT, the AHA's New Cardiovascular Disease Risk Calculator. JAMA. Published online December 27, 2023. doi:10.1001/jama.2023.25115

Primary Practice Resources

New from Health Quality Ontario for 2024: Quality Standards for Hypertension Care in the Community from Health Quality Ontario

Health Quality Ontario (HQO) has recently unveiled new quality standards specifically tailored for hypertension management in community settings. HQO has developed resources for primary care nurse practitioners with the goal of enhanced patient outcomes. Resources are available for nurse practitioners and their patients to better prevent and manage hypertension in adult patients in the community. The resources are available for download by interested practitioners.



Hypertension Care in the Community for Adults

A comprehensive overview of the quality standard. The quality standard focuses on the prevention, screening, assessment, diagnosis, and management of hypertension in primary care, and in long-term care and other home and community care settings.

Hypertension: A Guide for People with High Blood Pressure

An introduction to the concept of quality standards for patients, and an outline of the top 7 areas to improve care for people with hypertension. The guide also provides discussion points for patients to use when talking about hypertension with their care team.

Quality Standard Placemat for Hypertension

The placemat is a quick, 2-page summary and resource for the seven quality statements for hypertension management. Links to additional resources are provided.

Getting Started Guide

A learning tool and implementation guide to using quality standards to improve delivery of care.

The guide is intended for clinicians and others in the health system, with an overview of quality standards and how they can be implemented in your practice setting.

Case for Improvement (Slide Deck)

A comprehensive presentation to introduce the hypertension quality standard and share the concepts with your team.

Technical Specifications

This document provides technical specifications to support the implementation of the Hypertension quality standard.

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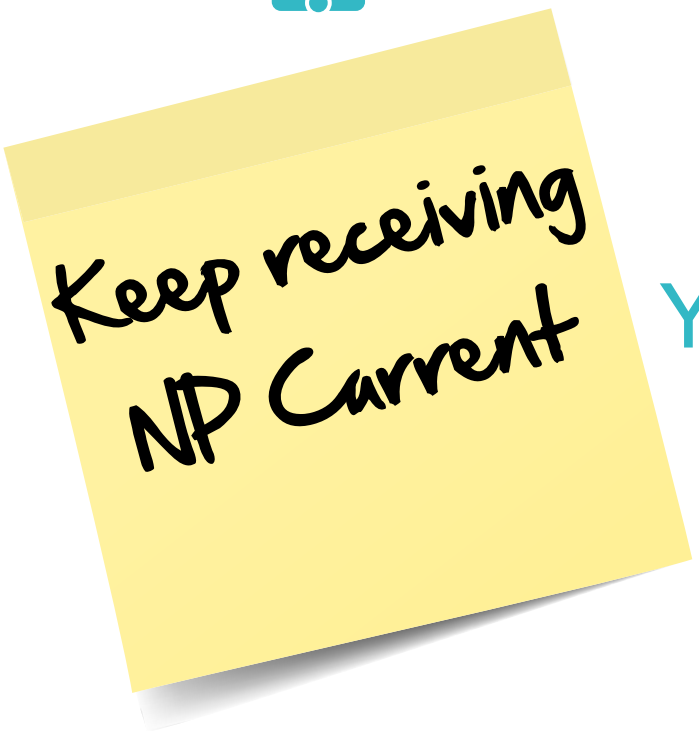

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