

# Capabilities of Paediatric Osteopaths

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## Executive summary

### Aims of the project

Secondary aims were to: The Capabilities of Paediatric Osteopaths project was established by the Osteopathic Council of New Zealand (OCNZ) in 2010. The key aims of the project were to:

- gain insight into current paediatric practice in New Zealand
- develop a set of capabilities for osteopathic practice that incorporate a paediatric perspective within the general scope of practice
- gather data from the profession that would indicate what performance indicators for key processes and activities within appropriate and capable practice would look like.
- identify the core knowledge, skills and attitudes required for paediatric practice that would enable curriculum development for a range of educational and training opportunities (e.g. within an existing pre-professional entry-level programme, or for a one-off or series of continuing professional development events / qualifications, which would support those who need upskilling and act as a guide for those who want to maintain appropriate professional experience and relevant skill sets to maintain competence and capability over their professional lives).
- see what an assessment or credentialing exercise might look like, to ensure a baseline level of competence that is based on assessment for learning principles, is the least threatening for the profession while being sufficient for needs (robust and able to capture required capabilities), and recognises professional and regulatory resource constraints
- provide feedback on what professional support system(s) would be required to enable engagement with, and change processes (where required) for, current and future registrants.

The project outcome for the end of 2013 was: 'All key primary and secondary aims are either achieved in full, or require only minimal further work to be completed'.

### What has the project achieved?

The Capabilities of Paediatric Osteopaths project (the project) has yielded a range of background information about paediatric practice in New Zealand. It has also had the added benefit of bringing osteopaths together to discuss the nature of their practice and how it should be clarified for the benefit of all key players, including registrants, the OCNZ, patients, the health workforce, and the wider health care system in New Zealand.

The standards in paediatric osteopathic practice that have emerged from this process have been derived solely from contact with currently registered osteopaths in New Zealand.

The OCNZ is now aware that osteopaths see children, and that children mostly receive gentle, soft-tissue, articulatory, cranial or biodynamic styles of osteopathy. There is evidence of inter-professional collaboration, and awareness of challenges and risks in paediatric practice and the need for constant engagement with the current evidence base. Children are mainly seen in a supportive environment to ease symptoms and improve quality of life relating to a range of common musculo-skeletal conditions, and some minor or non-life-threatening problems such as ear infection or dysfunctional breathing.

Osteopaths are aware of screening procedures, but they may need upskilling in various areas because some practitioners may not have developed beyond their original training. However, there is also evidence that some osteopaths have raised their competence far beyond their basic training and are demonstrating complex analytical skills in their approach to paediatric osteopathic practice.



In this respect, the osteopathic profession is no different from the general health-care professions, in that skill sets vary, some professionals don't keep themselves up to date and some become less competent over time. The major difference is that, unlike in other established areas, there are currently no systems in place to capture poor or deficient practice specific to paediatric osteopathic practice. There is also no requirement to undertake ongoing credentialing or professional review (beyond that currently required for the general scope, which is not paediatric specific) to ensure appropriate practice is consistently delivered.

Participants in the project acknowledged (informally) that sharing information has been valuable, and this knowledge sharing is beginning to replace knowledge hoarding as perceived challenges to practice security are picked apart and understood.

## Key findings of the project

### *Finding 1*

It is unlikely to be possible to identify a postgraduate course or programme that will provide appropriate learning needs for all registrants based on their individual learning needs and level of expertise.

The draft basic knowledge, skills and attitudes (KSA) areas to include in a paediatric learning programme, and which may be relevant to immediate upskilling, are highlighted in Finding 2. Although these can be shared with individual education providers, they are of limited value until more guidance on standards and performance indicators are established within the profession. This is because curricula can only be written for appropriate learning objectives, which are based on an understanding of what is to be assessed (i.e. what the standards should be). They are, however, of some value in self-reflection exercises and can more readily be applied in such a context.

### *Finding 2*

Topics that are most likely to be required by most osteopaths for immediate up-skilling are:

- critical thinking
- case history-taking, information retrieval, tests and screening
- ethics in child health care
- basic health programme provisions in New Zealand health care
- child health systems and support networks
- mental health issues for children
- management of the health needs of the under one-year-olds across a wide spectrum of needs
- Māori paediatric health care issues
- adolescent health issues
- communication and interpersonal skills in an integrative health-care arena.

### *Finding 3*

The role(s) of the post-natal baby check should be clarified with urgency.

### *Finding 4*

The following questions were identified.

1. Are osteopaths 'going through the right motions' in terms of broadly following capabilities?
2. Is there any individual evidence, or evidence of commonality of approach, to indicate that osteopaths are broadly aware of the content of the capabilities?



3. If they are broadly following the capabilities, is it possible to determine that the standard is set appropriately?

The answer to questions 1 and 2 was found to be yes. Question 3 cannot be answered in the same way, because current practice is variable in its standards with regard to the management of paediatric practice, especially for infants and adolescents.



## Recommendations

**Recommendation 1:** *To ensure strong professional ownership of the identified paediatric capabilities, a high-stakes, profession-wide credentialing exercise to demonstrate fitness to practise across all ages of children would **not** be the most appropriate exercise for the OCNZ to require of registrants as its first option.*

There is little evidence of widespread poor or inappropriate paediatric practice, so this would be an unnecessarily large hurdle. Most deficiencies should be able to be addressed through an educational process, using assessment-for-learning principles.

Even if a baseline of competence were required, people would still need an opportunity to return to fitness to practice, and this would require an educational process of some sort. There are currently insufficient assessors that could be engaged for such a process. (See recommendation 10 as a caveat.)

**Recommendation 2:** *The osteopathic profession should be asked to engage in a formative self-assessment process, using written test items as the culmination of an educational process, so that they can be supported in self-assessing their learning needs based on the information gathered in the project, to help attain appropriate knowledge, skill and attitudes.*

Osteopaths should have a compulsory e-module and test as part of their required continuing professional development programme. They should not have to 'pass' at this stage: it would be a learning tool and guidance as to what standards they should be working towards.

After a period of engagement, they will become familiar with the detail of the standards required and can decide on the nature of their ongoing engagement with paediatric practice.

Having an upfront self-assessment formative exercise will give time for an appropriate team of assessors to be developed and trained, ready for a future high-stakes credentialing event that would by this stage be appropriate and fair. It also gives time for benchmarking exercises to be undertaken, to ensure that the final standards are acceptable and achievable.

**Recommendation 3:** *More work should be done to continue the standard-setting approaches of this project, because the main area where the project was unable to meet the original aims was in reaching a consensus on standards among an assessing pool of appropriately skilled paediatric osteopaths.*

Note that the project was able to gain sufficient data, and we now have sufficient templates to guide standard setting across a broad enough range for the OCNZ to use in formative or high-stakes activities, with only limited further outlay.

Undergoing the self-assessment test, as outlined in Recommendation 2 will enable standard setting to be further explored. Using a formative assessment process will enable the results to be scrutinised as a modified benchmarking exercise, to ensure standards are further debated and to consider the divergence between baseline and expert, special interest and vocational competence.

**Recommendation 4:** *A pool of 60 key features and 60 extended matching questions (120 in total, each with three sub-parts – giving 360 items) should be drafted using the data sets already collected. A team of health-care professionals in the paediatric field, but outside of osteopathy, should be asked to scrutinise these questions and items for relevance and purpose. This resource could then be passed to a panel (see Recommendation 5) for final scrutiny and standard setting.*



This will ensure vital inter-professional considerations and safety considerations are captured. This drafting process could be carried out in three to five days by the current project leader, and could then be further developed by others (such as the panel members discussed in Recommendation 5).

Written test items are familiar tools across all health-care professions and will make an easy point of comparison (or contrast) between the professions, helping to clarify the osteopath's role more effectively.

A one-day meeting, with some preparatory work and communication, (facilitated by the current project leader or similar person) could gather four to six other health-care professionals for a day to scrutinise the item content and themes for relevance and purpose in a wider health-care and risk management / safety context.

If an e-module ends with people having to do a sample of 40 questions (20 key features and 20 extended matching) in a formative exercise, the fact that people can then view it as an open-book or collaborative exercise, or one they can repeat until they 'get it right', means that it is not threatening. The key focus is firmly on education and upskilling, so the more that people share and debate, the better.

Getting everyone to do the credentialing test at no individual personal risk (to their registration status) will be better tolerated and will give the OCNZ the feedback it needs in terms of broad indicators of profession-wide deficit (or otherwise). This will, in turn, enable it to better direct education programmes and help establish a baseline of competence.

The principle of using an exam as a formative learning tool purely for upskilling purposes is well established and accepted, and was discussed in the previous report to the OCNZ and Australia and New Zealand Osteopathic Council (ANZOC) in the context of developing an assessment programme for overseas-trained osteopaths.

Also, at the end of the test, people may have a better idea of their learning needs, and a better idea of whether they want to opt in or opt out of any registration endorsement scheme. This embraces the idea of reasonableness in assessment and process outcome.

The under-ones high-stakes exam discussed in recommendation 10 could be formative for one attempt, and then made high stakes.

**Recommendation 5:** *A team of 8 to 12 osteopathic paediatric practitioners should be invited onto a panel to determine the case pathways / processes, the draft bank of 120 questions, and the contents of the e-module mentioned in recommendation 11 below. They could continue the work on standards / anghoff and other related considerations, so that the bank of questions is finalised.*

Further recommendations on how to nominate people onto such a panel are given below. This panel could receive one to two days' instruction from the current project leader to ensure their orientation to the task, which they could then do independently on an ongoing basis.

This panel would receive the 120 scrutinised questions (as per Recommendation 4) as a basis for their work. The panel could then maintain, add to and scrutinise the question bank over time, and go on to develop OSCE<sup>1</sup> / mini CEX<sup>2</sup> / DOPS<sup>3</sup> events for any other review purposes the OCNZ might wish to develop. This might include a competence pathway for paediatric practice in overseas-trained osteopaths, or as part of a vocational scope credentialing exercise, or as part of a fitness-to-practice or return-to-work event.

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<sup>1</sup> Objective Structured Clinical Examination

<sup>2</sup> mini-Clinical Evaluation Exercise

<sup>3</sup> Desirable Objectives and Practices



**Recommendation 6:** *Such a panel should further develop the care pathways / care processes outlined in this project, based on the data sets already developed, and should liaise with the Canterbury Health Initiative, if possible.*

As a minimum, permission should be sought from the Canterbury Health Initiative to use their Health Pathways in some way as an ongoing part of the OCNZ's work in this regard. After initial orientation, this ongoing work could be done using people other than the current project leader.

The development of the above item pool would require a select group of osteopathic paediatric experts and selected external health professionals, such as midwives, general practitioners (GPs), speech and hearing practitioners, and community nurses.

The exercise to develop the written items could be used as the main point of inter-professional scrutiny, and the outcomes used to guide the debate of the panel in order to finalise the case pathways.

Note that the case studies and flow charts are still under development, and could be tidied into a next-phase format in preparation for the above tasks with two to four days' work by a small team, and then sent to the panel for a Delphi-type consensus activity, or simply for comment and final clarification. This would be part of the work described in Recommendation 11.

**Recommendation 7:** *A final e-module should be developed, that would cover the key knowledge, skills and attitudes areas identified in the project. This e-module should be made available free to registrants to complete, culminating in their completion of the written test items (a select pool of 20 from each question type).*

A way of reviewing practical skills should be further developed. Mini OSCEs might be able to be developed for peer groups. Alternatively, educational events or demonstrations with other professionals (such as Plunket nurses, or by joining GP surgeries) might be relevant. Lectures or conferences could also be used if suitable.

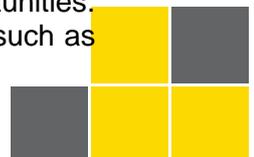
Certificate of Completion of Update modules, which cover case-specific issues and capabilities, with written test items embedded for base knowledge, are probably the most efficient and least costly way of ensuring that people who treat children can demonstrate a background of training or attainment in this field. The test could be delivered through a Pebblepad platform or other e-platform. This could be further strengthened by a low-risk formative assessment.

This is not the same as a full credentialing programme or full test of competence, but would provide evidence to third parties that osteopaths have been given a well-developed and relevant educational programme on which to base their claims for capability to treat children under the general scope.

A formal credentialing process can come later, once the entire profession has voluntarily gone through the above education process, or opted out from wanting to have a paediatric endorsement on their practising certificate.

**Recommendation 8:** *The OCNZ should work with Osteopaths New Zealand, education providers and registrants to engage all parties in the roll-out of the recommendations made here.*

Change is always more successful if accompanied by a positive and collaborative mind set. The OCNZ should consider using the proposed Paediatric Conference in July 2015, being organised by the Canterbury peer group, as a platform to deliver further learning opportunities. The OCNZ could also ask if some practical workshops on physical screening tests, such as



head examination, paediatric neurological screening and palpation of sutures and hip tests in children, could be included.

**Recommendation 9:** *The OCNZ should gradually move to a high-stakes credentialing process over a period of two years, such that osteopaths would either remain seeing paediatric patients within the general scope, or, if/when a vocational paediatric scope of practice has been developed, move entirely to a paediatrics vocational scope. Ongoing practice without a robust point of reference is not sustainable in 21st century health-care practice. (See Recommendation 10 as a caveat.)*

Deferral until other work on refining and developing the current continuing professional development requirements, and until the peer group activities and profession-wide use of Pebblepad (or similar) is more complete, would be a cost-effective and equitable use of resources.

It is recommended that paediatrics for the over ones *remain* within the general scope, and that osteopaths be credentialed to remain able to see such patients within the general scope (see Recommendation 10 below).

If the OCNZ is moving towards a re-validation / re-credentialing format for all osteopathic practice, this would dovetail with that system. The high-stakes revalidation would include paediatrics as well as general osteopathic considerations.

**Recommendation 10:** *In the light of Finding 4, and because the depth of clinical knowledge across a range of issues relating to the under-ones is variable, a high-stakes knowledge test for osteopaths wishing to work with babies under the age of one year should be developed immediately. This would be implemented earlier than the general paediatric high-stakes process referred to in Recommendation 9.*

Many areas of the data gathered during the project indicate that the skills and knowledge required for working with very young babies (such as those under the age of one year) are significant. It is clear that there is variation in knowledge among the profession, and therefore competence is unlikely to be universal among the current pool of registrants.

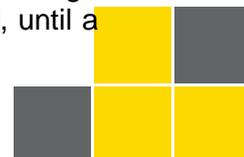
Because of the high risks involved in the care of infants and babies, it is less reasonable to wait for a gradual proposal of upskilling through education and self-evaluation, as discussed above. Such a schedule is more applicable to the general paediatric population over this age group (notwithstanding that there is risk to be managed there also).

Although there is no evidence of lack of standards in the care of infants by osteopaths, if the OCNZ wished to be prudent in its policy, this age group of children should be considered as requiring special attention in the short term in relation to policy development.

All of the previous recommendations could also lead to the development of an appropriate knowledge test. This might involve one to two more days of initial question writing, and a further day of liaison with midwives, lactation consultants, paediatricians and Plunket nurses, to ensure all risk management issues are covered by the written items.

The test and education module could be developed on the same timeline as discussed above, and the test administered in regional meetings under test conditions (or people could sit the test in the local health board offices in their locality). There is no reason not to include a preparatory e-module, and the hurdle to overcome in the high-stakes exam is set at baseline competence for safety and risk management in the care of infants – not at the level of expert in the vocational osteopathic the care of infants.

A temporary caveat to the current general scope could be introduced, such that those who passed the high-stakes exam could practise and see all ages of children, with the knowledge and skill sets for the over-ones managed through self-assessment during this period, until a



full vocational scope can be developed. Then the baseline management of infants under one, and the expert management of other ages of children, could all be contained within a vocational scope, requiring some sort of high-stakes credentialing at that time.

A separate vocational scope of 'expertise' in dealing with children under the age of one could then be developed at a future date.

Registrants who do not pass such a test should be able to re-sit within a period of no less than six months, after undertaking further training or self-education of some sort.

It is also recommended that consideration be given to the proposal that post-natal checks on infants should ultimately *not* be contained within a general scope of practice if a vocational scope is developed.

Although many osteopaths want to be able to undertake these post-natal checks, acquisition of the skills required to safely manage the risk associated with young children is very difficult. Current undergraduate programmes and the educational biographies and clinical experiences of current osteopaths are not sufficient for the OCNZ to recommend relying solely on a period of gradual self-improvement.

A high-stakes written test on key KSAs might be an appropriate compromise in the short term, rather than identifying a compulsory postgraduate course or qualification, or some alternative option that may take some time to evaluate.

**Recommendation 11:** *The raw data, maps and processes generated during the project could be compiled into a draft e-module format for registrants to consider, and would constitute the main part of the educational opportunity referred to in Recommendation 2. This would provide the basis for the panel to work with, and would be delivered to the panel with the bank of 120 draft questions.*

### Nominations to be on an assessing panel for peer review

This is a policy that could be adopted for all peer review committees by the OCNZ across all scopes. Places on the panel should be nominated by the profession.

The following criteria would apply in order to enter the ballot as a candidate.

- Candidates should be working with children, and should demonstrate this with a small portfolio of their work (if they are going to assess others, they must start by reviewing their own practice).
- Candidates can nominate themselves, but their application will not be supported unless three of their peers also nominate them. These peers cannot be employers, relations, employees or other similar close professional or personal relationships.
- Candidates' applications will not be supported unless two other health-care professionals outside of osteopathy nominate them as being 'interactive, engaging, knowledgeable, and able to interact effectively within the New Zealand health care system'. These other professionals can be midwives, Plunket nurses, GPs, paediatricians or similar.

All successful applications meeting the criteria would be placed for open ballot, and registrants could vote for them in descending order: i.e. by putting 1 by their first choice, 2 by their second, and so on, until they have ordered all the available people. They could score through a name if they did not want to vote for that particular nominee. Those candidates with the highest numbers of votes would get in, up to the maximum number of places on the peer review committee: a minimum of 10 is desirable.



# 1 Introduction

The Osteopathic Council of New Zealand (OCNZ) is the statutory regulatory authority for the New Zealand osteopathic profession, as established by the Health Practitioners Competence Assurance Act 2003 (the HPCAA). The principal purpose of the HPCAA is to protect the health and safety of members of the public by providing for mechanisms to determine scopes of practice, and ensure that health practitioners are competent and fit to practise within their scope(s) of practice.

The OCNZ is required to determine competence and ethical frameworks for practice, accredit tertiary institutions offering osteopathic courses leading to registration in the various osteopathic scopes of practice, and assess the competence of overseas-trained osteopaths and those subject to disciplinary processes or who are returning to practice after career breaks.

In order to ensure patient safety, maintain appropriate professional standards and inform other areas of its regulatory duties, the OCNZ has developed accreditation standards and a credentialing process for its general scope of osteopathic practice to identify the standards required for those graduating with a registrable qualification from a New Zealand institution, or for those immigrating from overseas, with an overseas qualification. The aim is to ensure that the community of osteopaths in New Zealand are practising to a common and agreed set of standards, and that these can be assessed or monitored in some way.

The challenges posed by maintaining professional competence and capability within the workplace across a professional's working life are compounded when the immigration of international osteopathic graduates with a range of educational biographies is considered, because they require orientation to the local dynamic and standards prior to commencing their New Zealand work. A regulatory body in this situation requires a credentialing process that is both robust and authentically related to competence in practice (as opposed to focusing on historical curriculum or accreditation processes based on educational inputs). These challenges are common across regulatory authorities for various health professions (Lysaght & Altschuld, 2000), and there are well-structured processes emerging in Australasia (Griffiths & Homer, 2008) that use similar approaches and frameworks to the ones being adopted by the OCNZ.

As the osteopathic regulatory framework in New Zealand has developed following the inception of the OCNZ, the Council has acknowledged that there are fields of interest in osteopathy – either within or outside the general scope of practice – that require specific consideration.

One of these fields of interest is paediatric care, and this report discusses aspects of care that are pertinent to the practice of paediatric care by osteopaths. These aspects are important for the OCNZ to consider when reviewing the competencies required for practice, and other regulatory issues.

This report also documents the second stage of a project commissioned by the OCNZ for developing a set of capabilities for a paediatric scope of practice, should this be required.



## 2 The project to develop capabilities for paediatric practice

### Overview

Globally no other osteopathic regulatory jurisdiction appears to have developed or adopted a set of capabilities for practice that specifically relate to paediatric practice by osteopaths. Where standards have been adopted, they are embedded within a general set of capabilities or competencies.

In New Zealand the capabilities for practice need to encompass the standards required for all areas of a practitioner's scope of practice. However, for assessment and regulatory purposes an understanding of performance in paediatric practice is necessary for appropriate management of the profession's osteopathic practice. Understanding performance is necessary to ensure appropriate professional standards are in place to protect the public, and to guide policy on health workforce supply and health system quality and service delivery.

Although there are various post-professional courses (e.g. Master's-level continuing professional development courses in paediatrics for osteopaths), the related learning objectives required of a curriculum leading to a qualification do not, in themselves, equate to a regulatory framework for practice. For this you need a set of competencies or capabilities to guide and inform practice and its credentialing or review. You also need an understanding across the profession of the performance indicators that illustrate the required standards – what constitutes capable practice.

The OCNZ has previously invested heavily in projects that have delivered an understanding of what is meant by competence, capability, assessment and reflection through their engagement in developing a process for assessing overseas-trained osteopaths in New Zealand. This investment was undertaken independently through 2008/09 and 2009/10 in conjunction with the Australian and New Zealand Osteopathic Council (ANZOC), of which it was at the time a member. The details of the development of an overseas assessment process and its accompanying philosophy have been published (Stone et al., 2011).

The OCNZ has also invested in exploring scope-of-practice issues for osteopaths, as it is required to do under the HPCAA. An understanding of capabilities and standards, with any accompanying assessment and credentialing tools, is strongly intertwined with the development of scopes of practice.

As of April 2014 there were 417 osteopaths with practising certificates in New Zealand. The OCNZ does not have any explicit powers regarding workforce planning under the Act. However, it is implicitly understood that regulation, in so far as it protects the public, should also facilitate workforce supply, and that scope of practice needs to be aligned to meet the health needs of the population.

Health Workforce NZ is the agency charged with facilitating the evolution of scopes of practice, and they deal with the public health providers. The complex governance structures that support other health-care professions are manifestly absent from osteopathy. This reinforces the prerogative for the OCNZ to ensure that scope of practice and competence frameworks are congruent with the strategic direction. Once scope has been determined, roles can be clarified and health workforce planning can be executed appropriately.



## The first phase of the project

In 2010/11 the OCNZ commissioned the first phase of a project to develop a set of capabilities for practice to inform a paediatric scope of practice, or for osteopaths working within a general scope of practice seeing paediatric patients.<sup>4</sup>

The project initially had to provide a picture of current osteopathic practice relating to children, because there was no data on which to consider further action or policy. The first part of the project culminated in a workforce snapshot survey of osteopaths who were seeing paediatric patients. It also resulted in a report on how to explore the development of paediatric capabilities and related assessment or professional support structures to maintain competence and capability over registrants' lifespan of practice as osteopaths in New Zealand.<sup>5</sup>

### Key considerations from the first report

#### *Do osteopaths see paediatric patients?*

Yes, osteopaths do see paediatric patients.<sup>6</sup>

#### *If so, why, what for and on what basis?*

Mostly visits are for biomechanical-related strain in the neck and low back, various sports injuries, and issues relating to changing biomechanics and gait through ageing. There are also some issues of neck and jaw/head strain in infants (such as might follow minor birth trauma), and some treatment in support of general health issues (usually for a low-risk minor ailment or illness).

Most paediatric patients are brought to the osteopath by their parents or a close relative, and many present without seeing another health professional in advance, although there is some inter-professional referral to osteopaths, and on from osteopaths to mainstream health-care providers. (For details, see the 2011 report and papers.)

#### *Have they been trained for this?*

There has historically not been, nor is there currently, any specific requirement for additional or particular training in paediatrics beyond an osteopath's basic registerable qualification.

Osteopaths currently practising in New Zealand do so from a platform of diverse educational biographies, determined by their original qualification and personal choices as to whether they take up various continuing professional development opportunities.

The General Scope of Osteopathic Practice, as outlined by the OCNZ, does not exclude the treatment of paediatric patients, but has historically been unclear on details of the management of paediatric patients where these might differ from those required in general (non-paediatric practice). Historically there has been greater clarity of understanding concerning the standards required for adult practice compared to paediatric practice within the osteopathic profession.

Nevertheless, the standards required for paediatric practice as opposed to general (adult practice) are more uncertain, and there is an urgent need to clarify the standards required for

<sup>4</sup> See the Data and Communications folder, part one, item 1, for the research / project proposal for that first phase.

<sup>5</sup> The OCNZ received the report in May 2011.

<sup>6</sup> Those under 18 years of age.



practice in this area in order to maintain patient safety and appropriate clinical management of patients.

### Comment

It is unclear what the impact of this lack of apparent awareness of standards has been on actual clinical care. It may be that there is currently limited negative clinical impact, although it should be acknowledged that this could be more to do with luck than judgement, which cannot be relied upon from a regulatory perspective.

### *How are paediatric patients treated?*

Treatment mostly involves hands-on, gentle, soft-tissue stretch and mobilisation techniques. High-velocity thrust techniques, usually called 'manipulation', are rarely performed on those under 18, and in the survey were not employed on children under the age of eight years. Other types of care included parental support, education, dietary advice and rehabilitative instruction. (See the 2011 report and papers for details).<sup>7</sup>

### *What is the risk associated with paediatric care by osteopaths?*

There is an extreme paucity of data on the risk associated with paediatric osteopathic care. The one area of complaint dealt with by the Health and Disability Commissioner in New Zealand concerned the identification of, or impressions of, a possible history of sexual abuse. This related to the palpatory findings of an osteopath during a treatment for which there was no adequate history, no differential diagnosis, no informed consent and no corroborating clinical evidence (the Rodrigues Case). Within the project there has been much debate on risk, with views ranging from 'The current situation is inadequate for purpose i.e. people are under-trained', to 'The status quo works well and while we can all do with extra support, things are fine'.

The important questions are: how are practice standards in paediatric osteopathic care determined, how are they monitored, and what training and continuing professional development is available to osteopaths?

### *What are the implications for the OCNZ?*

#### *Management of clinical risk*

In general, risk management should not be limited to a discussion of any neurological and vertebrobasilar/vascular injury risk associated with manual medicine techniques (French et al., 2003; Reggars et al., 2003) and discussion of associated informed consent (Walker et al., 2004), as is relevant to the high-velocity thrust technique performed by chiropractors and osteopaths, among other professions.

Risk management relates to being appropriately competent, with the relevant underlying knowledge, skills and attitudes, and to learning from errors and misjudgement. When a person is cared for, problems in the management of that care plan can arise, and risk can be managed by analysing factors that anticipate and aim to reduce the likelihood of problems arising in that care management plan.

Care management problems can arise in any and every clinical situation. There may be organisational (Vincent et al., 2000) or individual factors involved. Exploration of a range of

<sup>7</sup> For a short version of the 2011 report, see the paper 'Osteopathy and the healthcare of children in New Zealand' in the Data and Communications folder, part one, item 2.



clinical management scenarios with which osteopaths are commonly engaged, through a lens of risk assessment protocols, may be a useful framework for determining the required underlying skills, knowledge and attitudes necessary for safe and reasonable osteopathic practice in the paediatric field.

### *Is clinical exposure sufficient to ensure competence in the use of screening tests?*

When considering standards and skills sets, it might be appropriate to consider not just knowledge but practical skills as well. Reviewing the efficiency of one osteopath's 'hands' over another's, and how effective treatment is, is very complex and beyond the scope of this project.

However, what can be considered is their ability to perform more routine tasks (screening tests), which are supposed to be carried out according to strict protocols. These are not open to 'osteopathic interpretation' in the same way as feeling the quality of tissues and ascribing 'meaning' to the results, as osteopaths do in their hands-on work. This means that performance on screening tests can be reviewed.

In order to carry out clinical screening tests the test has to be familiar and done well, and the osteopath must be aware of possible outcomes and the clinical implications of one test result compared to another.

As an example, this report later discusses how the project used the development of maps and 'pathways' to identify how an osteopath might broadly approach the management of a given situation. One example mapped was 'glue ear'. In terms of testing, some osteopaths thought that osteopaths should use otoscopes and some did not. If one did think osteopaths should be proficient in otoscopy, this implies that they should be sufficiently trained and maintain competence in order to keep up to date and retain their skills. It is one thing to know that a test should be required; quite another to be skilled at performing and interpreting the results oneself.

Given the number and range of clinical situations required to become proficient in the use and interpretation of any given test, it is questionable, at a general osteopathic level, whether an osteopath can be skilled enough to rely on the outcomes of various tests they have performed themselves.

The project outcomes (e.g. from the piloting using written test items, and from the OSCE during the October Paeds weekend) showed that the level of skill among osteopaths is quite wide, and capability did not appear to be widespread among participants. If this is extrapolated across the range of osteopaths engaged in paediatric practice, then it is likely that many osteopaths would not have sufficient discrimination to use the tests properly, as their practice may be based on insufficient clinical exposure to ensure adequate performance in applying the tests and interpreting the findings.

This may limit the value of osteopaths performing tests, and therefore their ability to contribute to triage or the differential diagnosis components of care pathways for various children across a range of clinical presentations *without further training or very specific credentialing*.

Another example of the need for specific skills is physical assessment for hip dysplasia in infants.

So, does the use of screening tests by osteopaths minimise risk, or potentially increase risk (if training is inadequate)? It is not being suggested that osteopaths refrain from using clinical screening tests, but there is a question as to what we can determine clinically from them if our skill set is likely to be minimal in this regard – and how we manage the person accordingly.



## Other factors relevant to risk management in osteopathic practice

### *Influences on patient and parent/carer decision-making: self-triage of differential diagnosis*

Influences here include:

- the patient determining how sick they are and who they should see
- risks associated with the degree to which the osteopath may or may not rely on this patient self-triage.

Self-triage, or the decision if and when to seek medical care, is crucial but intrinsically complex (Hall et al., 2010). Such decisions are influenced by many factors, and when determining the educational needs of osteopaths in the field of paediatric care, for example, it is important to determine the influence of self-triage in the decision-making of the parents or carers of paediatric patients (or of the children themselves, if they are old enough to make comment). In considering safety in osteopathic practice, it is important to consider the reliance or otherwise osteopaths have on the validity of patient or parent/carer self-triage in relation to how robust the osteopath's own differential diagnostics skills are or should be.

### *Patient intuition*

Linked to self-triage is the concept of patient intuition, which can influence how patients and carers/parents see health professionals' help.

Patient intuition is known to influence decision-making for self-referral to practitioners (Buetow & Mintoft, 2011). The use of intuition in self-referral to Complementary and Alternative Medicine (CAM) and osteopathy may be more prevalent, as patients tend to rely more on social, family and informal networks to help their decision as to whether to attend an osteopath or not, compared to whether they might see a GP, for example.

#### **Comment**

Is the osteopath influenced by these factors, and what biases are involved? How does this affect differential diagnosis by the osteopath and the care management plans developed by the osteopath?

Osteopaths relying on patients to 'self-select' whether they should see a GP or an osteopath, and on patient intuition as to whether the condition needs 'medical attention',<sup>8</sup> may be compounding decision-making biases (by the patient or parent) based on uncertain or inaccurate patient or parent/carer intuition and partial knowledge. This may lead to inappropriate clinical decision-making and interrogation on the part of the osteopath.

The extent to which this is happening, and the actual risks involved, are unknown, and this poses a challenge to the regulatory authority in terms of policy making.

### **So, what standards should apply?**

As indicated above, there was insufficient data for clear decision-making at this point, and therefore, to ensure appropriate regulatory function, the OCNZ commissioned the second phase of the project.

<sup>8</sup> 'Medical' here refers to mainstream medical opinion, such as that normally delivered by a GP or registered medical practitioner or specialist. Osteopaths are viewed as allied health-care practitioners.



## Phase two of the project

In order to develop the methodology and framework for the second phase, it was necessary to consider a number of factors based on the outcomes of phase one:

- roles are not defined
- standards have not been not established
- credentialing and curriculum issues cannot be determined until these first two components are developed further.

The perception was that because of this lack of clarity (of roles and standards), the underlying competence of osteopaths could not be demonstrated or measured. The assumption, therefore, was that there is a strong risk that competence is inadequate for the roles osteopaths were/are attempting, and this is not defensible from a patient safety, risk management or regulatory perspective.

It was also assumed that limits may have to be placed on practice if, ultimately, competence cannot be demonstrated. This naturally has caused confusion and concern among registrants, who fear their livelihoods and potential for future practice growth will be significantly affected. Fear and confusion increase resistance to learning and behaviour change (if knowledge, skills and attitudes required for competent practice are shown to be deficient).

For the OCNZ to frame an appropriate strategy based on this final report, it is worth reflecting on the impact of role definition, scope and credentialing, as this may help frame approaches to engaging with the profession in an ongoing process.

### What is the risk for currently registered osteopaths in defining paediatric-specific capabilities and performance indicators?

In medicine, specialists and specialties are well defined and have quite specific competencies that are clearly identified. The roles and boundaries of a clinician's work are supposedly well described and understood, both by themselves and by those around them. The employment and career advancement strategies for individuals are thus easily mapped, and pathways for progression are oriented towards attaining different competencies. It is recognised that different types of medical practitioners have clear borders to their scope of practice.

There is security in tenure in this regard, by enabling deeper engagement within a specific scope, even if it limits the breadth of clinical reach. Role clarity can have various advantages, such as professional kudos and improvement of communication. Patient mobility through the health-care system can thereby be enhanced, as improved communication leads to less inappropriate or untimely patient movement between practitioners (Stille et al., 2003).

There are also negative connotations associated with restricted scopes, such as stereotyping, being a barrier to communication, and in turn effective and/or necessary health care. However, role clarity can help limit medical error and risk to patients, because it helps practitioners identify when they are operating outside of their scope, and therefore beyond their knowledge and skill areas (i.e. beyond their competence) (Lillibridge et al., 2000).

Role confusion does exist in medicine, and in health care in general, even though the boundaries are supposed to be clear (Conner-Kerr et al., 1998; Jones, 2005; King & Ross, 2003). Role confusion can arise when the health-care system changes around the practitioner (Smith et al., 2000).

The idea that an employee has one career in one knowledge area, with one company, and that this career persists throughout their working life, is now considered archaic and unsustainable in a global economy (Engle et al., 2001). People attain a less bounded career by demonstrating increasingly smaller subsets of a wider range of competencies (Defillippi &



Arthur, 1994). In medicine, the traditional specialties and set roles, such as ‘nurse’ or ‘doctor’, which may once have been considered clear, bounded and stable constructs, are now seen as permeable, changeable and even perhaps vulnerable. So medical and health professional careers are also becoming challenged in terms of role clarity.

As a result, many medical professionals receive clear guidance in how to move beyond the boundaries of their current role, and have established training and professional support mechanisms to achieve a less bounded career. Just as in the general economy and business world, where role clarity and career pathway/architecture are now seen as increasingly permeable, this is also the case in health care.

So, role confusion can be common, and is an ongoing challenge as health-care systems develop, clinical knowledge and the evidence base become more extensive, and health system resources need to be continually (re)negotiated and often rationalised.

#### Comment

The literature on roles, boundaries, competence and so on is very wide, and if the OCNZ requires further background on this, then further reporting can be requested. Examples might be in the context of continuing professional development and attaining ongoing competence, and how clinical uncertainty affects competence, leading to a need for reflective competence as well as knowledge-based competence (Cheetham & Chivers, 1998); or literature on the concept of dynamic competence (SubbaNarasimha, 2001).

### The boundaryless osteopath

Osteopaths have always seemed to have a complex relationship with their identities as individuals, as a community of osteopaths, and as professionals wanting or ‘owning’ a certain scope of practice. Personal and social identity theories (e.g. Stryker, 2007) illustrate how maintaining or establishing a sense of one’s practice identity within a complex interweaving of differing identity frameworks creates challenges (Hogg et al., 1995). This may be especially relevant for knowing how to maintain competence and capability (which are naturally linked to various sub-sets of knowledge, depending on how that identity is framed).

Identifying conflicts in personal and professional issues of identity is key to appreciating the challenges to individuals working appropriately within a scope of practice, and the related competence issues.

The general theme arising out of the engagement with osteopaths over the duration of the project, coupled with existing awareness of the profession nationally, globally, historically and currently, has been that the professional identity of osteopaths is unclear, and becoming more confused, leading to professional uncertainty, fear and resistance to change.

Osteopaths are traditionally generalists: they were (and sometimes still are) historically trained to (try to) be ‘all things to all men’, capable of offering something to everyone, and so do not want to be limited to sub-sets of patients. As a result their fear is that role clarity will lead to role reduction, and to boundaries being placed on their professional freedom.

Many osteopaths want all osteopaths to be able to ‘see whoever comes in the door’ and not ‘turn anyone away, even if they don’t know much about that presentation or they are the only practitioner for miles around’. They want professional freedom, and they want patient choice (to see an osteopath, however skilled) to be maintained. They perceive that developing role clarity would lead to role boundaries, and would therefore impose a limitation on personal professional freedom and limit patient choice. However...



### Comment

It needs to be pointed out that role clarity does not equate to permanent role boundaries: role clarity is the pathway to being a boundaryless osteopath.

The way to achieve fewer boundaries and to have increasingly obvious ways of demonstrating or credentialing your role potential (breadth) is to show how you have attained competence in areas that other parties imagine or know to be relevant in their dealings with you. This facilitates the perception of relevance to the patient or to possible collaborative health-care professionals. (Advocating demonstrating the role is not the same as saying that the role potential was not already there.)

Osteopaths want many roles, and so to be acknowledged requires demonstrating that those roles are supported by appropriate knowledge, skills and attitudes/behaviours (KSAs). This means it has to be clear what those KSAs are in order for credentialing to be possible, and to ensure role potential is fulfilled and can be sustained.

In the context of paediatric osteopathy, it has become clear through the project that osteopaths are not clear on the roles they themselves want in their engagement with children: are they practitioners who screen for weight gain, act as a safety net, help change the course of chronic infective and debilitating conditions, help rehabilitation after complex paediatric surgery – or something else?

Many osteopaths also want different roles from those of their colleagues, even within the same knowledge field. One prime example revealed by the project has been babies who cannot suckle well. Is the role of the osteopath to screen for tight muscles around the jaw, and treat it so that the baby can open its mouth more to take a more appropriate latch? Or is it to provide advice on milk supply, or latch variations? Or to critique breast-feeding ability/methods across a number of mothers, as well as exploring muscle tensions in the infant or mother?

This lack of role clarity implies that there are layers to the type of clinical engagement the osteopath is considering. Role layering is an important consideration for the development of curriculum and credentialing, because each layer will have different KSAs. As a result, clarification of role layering is required to give relevant clarity, both to patients and to other health-care professionals.

### Regulatory risks and benefits from role clarity

Role clarity is also an important consideration for regulatory authorities. Clearly, presiding over a professional framework where all osteopaths attempt to directly manage any clinical situation just because it presents itself, or knowingly work in a field of practice or knowledge area where they know themselves to be weak (or worse, are unconsciously incompetent), is too risky in terms of appropriate patient care and safety, and would be impossible to regulate.

Role clarity is of clear benefit for developing regulatory frameworks, and for appropriate policy guidelines to be established to support effective accreditation, credentialing and fitness-to-practice reviews.

Role clarity should also lead to stabilisation of professional identity, which should help ownership of that identity by individual osteopaths, and thus enable change (and support upskilling where required), leading to more competent practice and therefore better risk management and patient safety.

It is important to be aware, though, that the idea of ‘multiple roles’ should not be shied away from and may in fact help behaviour change. This is because when organising or negotiating boundaries, mutually beneficial factors can be identified, and ways of linking with existing



knowledge sets and roles can be identified, which should all support behaviour change and improved practice (Mørk et al., 2012).<sup>9</sup>

### Role layering and depth of clinical engagement

In all the workshops and small-group work, the concept of roles within paediatric practice was continually revisited. No set data (such as interview transcripts) was collected, but long discussions on this topic were interwoven throughout the project. The essence of these was that osteopaths consider role layering to be relevant and potentially helpful in understanding the requirement for KSAs at each layer. The following layering concepts emerged.<sup>10</sup> The minimum initial role across all knowledge areas and fields of practice is to minimise risk for the patient. The following consecutive stages (and related roles) were then identified.

1. Triage the patient. (Note that 'triage' may seem a strange word here, but its use in this context is discussed in detail later in the report.)
2. Identify/facilitate appropriate screening and refer on as required.
3. Undertake whatever differential diagnostic considerations are within an osteopath's skill set. This refers to what can be done with case history, observation and hands-on examination if the patient remains with the osteopath and doesn't need immediate onward referral, or what can be achieved by further examinations on a 'concurrent care basis' (i.e. while waiting for test results or the outcomes of onward referral).
4. Help identify what factors are core elements of osteopathic practice relevant to that patient's condition (such as functional musculo-skeletal tensions creating pain or discomfort or reflex irritability) – *if doing so does not re-introduce some form of risk to the patient.*
5. Then, and only then, can it be reasonable to explore additional roles relating to the depth of clinical engagement one is considering.

Each role layer requires a different subset of KSAs, and therefore a different supporting curriculum, each with individualised learning objectives and credentialing tools to demonstrate attainment and competence/capability. These curricula must be flexible enough to support an individualised pathway for attaining competence, given the variation in the educational and experiential histories of individual osteopaths (Livesley et al., 2009), and may include complex mapping of inter-related competencies, and identification of the sub-specialty / role-depth-specific competencies to be attained (Levin et al., 2013).

Having a way of identifying attainment in the wide variety of complex roles possible in any given knowledge field will have the benefit of ensuring fewer boundaries to the breadth of osteopathic practice.

### Comment

<sup>9</sup> The Council may be interested in the following student thesis from UNITEC: L. Rose, 'A preliminary investigation into the attitudes and practices of New Zealand osteopaths in relation to the health care system: Does the future hold a greater degree of integration into the biomedical system?', Master of Osteopathy thesis, Unitec Institute of Technology, 2011; permanent link to Research Bank version: <http://hdl.handle.net/10652/1851>

<sup>10</sup> For the initial data gathered in support of this, see the commentary on the February workshop below, and the figure on clinical complexity, **Error! Reference source not found.** on page 33).



So, is the risk a benefit? Either way, this sets the scene for much of the work within the paediatric project: moving towards clarifying roles, so as to eventually determine KSAs, curriculum items and possible credentialing approaches.



### 3 Developing capabilities for paediatric osteopathy: how the second phase unfolded

The second phase of the project was initiated in 2012/13 to further the development of a set of paediatric capabilities. The aim was to establish practice standards and consider related assessment and educational issues.<sup>11</sup>

#### Overview

##### SurveyMonkey

Initial preparation for this second part of the project began in 2012, and registrants were provided with feedback from the first part of the project and aims for the second part.<sup>12</sup> They were asked to complete an online survey designed using the SurveyMonkey instrument. The survey was called the Capabilities for Paediatric Osteopathic Practice Survey.<sup>13</sup>

This covered what people thought about current practice – standards, training and what practice should consist of in terms of techniques. It also asked:

- for a brief description of what paediatric practice meant to the individual
- for comments on what health screening should either be routine, or in the context of otitis media, plagiocephaly, unsettledness / crying in babies, and young children with developmental delay
- if current practice standards are sufficient for the profession's and public's needs, what constitutes a 'good' paediatric consultation, and what suggestions people had for revising *Capabilities for Osteopathic Practice*, which osteopaths must practise to in the general scope.<sup>14</sup>

Sixty-eight responses to the survey were completed online, giving an approximate return rate of 17%. Some analysis of this data was undertaken by students at UNITEC in Auckland, in collaboration with the osteopathy programme, through a summer scholarship programme funded by the OCNZ.<sup>15</sup>

This data confirmed the earlier finding that the profession feels that standards are not currently high enough (as a result of inadequate or variable current training opportunities) and that more training is required. The feedback did indicate that respondents were aware of a range of examinations, knowledge areas and relevant clinical points when considering the clinical questions, and so there is some underlying relevant professional capability in this regard.

This bolsters the indications from the snapshot survey and interviews in the first phase of the project in 2010 that osteopaths have a reasonably broad understanding of required practice, and that they are performing actions (such as case history-taking, examinations, referrals and inter-professional communication, and case review) that are required for clinical analysis and for effective patient care.

#### The Capabilities for Osteopathic Practice Document

More feedback was required to develop the capabilities document. However, because many respondents had skipped this section or only briefly commented, a consensus could not be reached at this stage. The profession was then invited to participate in a workshop / focus

<sup>11</sup> See the Data and Communications folder, part one, item 3. This was then revised into the adopted version: see Data and Communications folder, part one, item 4.

<sup>12</sup> See the Data and Communications folder, part one, item 6.

<sup>13</sup> See the Data and Communications folder, part one, item 5.

<sup>14</sup> See the three Individual Capabilities Survey Responses folders.

<sup>15</sup> See the Data and Communications folder part one, item 8.



group, to be held in Auckland in February 2013,<sup>16</sup> which is described in more detail below. During that workshop the *Capabilities for Osteopathic Practice* document was thoroughly appraised and revisions noted and agreed upon, so that this document for the general scope of practice reflected appropriate reference to paediatric patient care and safety. Through this consultation with the osteopathic profession, adjustments were made to *Capabilities for Osteopathic Practice* to ensure that the capabilities reflected clinical management that includes paediatric patients. These changes have been Gazetted through the required notices, and were published in 2013. They must now be adhered to by osteopaths registered with the OCNZ.

## Standards

The main focus of the second phase of the project was to provide data on standards. For assessment and review purposes the OCNZ was concerned to explore possible performance indicators for appropriate clinical practice aligned to the revised capabilities. The next step, therefore, was to consider standards of practice for a variety of clinical situations, as this helps to develop performance indicators.

<b>Comment</b>
The report for OCNZ and ANZOC on the development of an assessment process for overseas-trained osteopaths showed that performance indicators are highly context driven, and are developed according to the specific assessment situation and tool that have been constructed. If you vary assessment criteria, the context of the clinical scenario being tested changes, as do the performance indicators for appropriate practice. It is possible to indicate performance by identifying appropriate skill sets, appropriate knowledge areas and practitioner attitudes and behaviours

It was also clear by this stage of the project that there was a natural hierarchy of skill sets across osteopaths already seeing patients, with some practitioners being recognised by their peers as having a particular special interest or expertise in an area. Osteopaths are already analysing their own skill set, and where they feel less than competent to deal with matters, many report referring on to a colleague or seeking their advice. This type of self-regulatory practice is commendable, but there is no data on how widespread this practice is, or how well it manages the risk associated with 'unconscious incompetence' in clinical care.

The implication is that standards of care for the general osteopath compared to an 'expert' might be different, and the OCNZ directed the project to consider baseline competence and capability so that those operating within the general scope could have appropriate guidance on the standards expected within that scope as they apply to paediatric practice.

Some discussion on the need for a vocational scope of practice for paediatric practice, or for those wanting recognition for advanced skills or knowledge, was undertaken in all stages of the project, and it seems likely that this form of structure will emerge over time. Before that can be established, though, we need to understand what constitutes baseline competence so that a hierarchy can be established on that basis.

<b>Comment</b>
Role layering is already occurring and should be able to be developed and clarified.

<sup>16</sup> See the Data and Communications folder, part one, item 6.



It is not possible to prepare for every possible clinical presentation or age of child, so it was decided to prioritise which ones to focus on. From the original survey and interviews in 2010, topics such as colic, plagiocephaly, respiratory and ear issues, developmental delay and growing pains were deemed common areas of interest for osteopaths, and a list of common conditions emerged from the snapshot survey.

For a project of this nature, and because the outcomes are aimed at changing professional practice, it is important that the profession is engaged in the process. Upskilling starts with knowledge transfer (Straus et al., 2011), and getting professionals to engage 'as a community' is considered to enhance the skill set and ownership by all parties in that community (Lave & Wenger, 1991). Challenges to practitioner satisfaction are varied (Mechanic, 2003), and in some instances are thought to have a negative impact on patient care (Konrad et al., 1999).

Introducing a new regulatory framework for paediatric practice represents a significant challenge to registrants' sense of professional security. The greater the professional engagement with the paediatric project process, the more opportunities there are for engaging people with that change process, thus dispelling fear and (hopefully) lessening resistance and negative 'retreat into old and perhaps unsatisfactory behaviour patterns', which can occur when change is imposed on people with little preparation.

The whole profession was asked to participate in the initial SurveyMonkey activity, and the whole profession was introduced to the second phase of the project. All registrants were asked to either nominate themselves or a peer whom they felt capable of contributing to the project, initially through attending the two-day workshop in February 2013 in Auckland. In what follows, the workshop will be described in some detail.

## The February 2013 workshop

Those attending the workshop were given the agenda and a variety of pre-reading, which was uploaded on to the OCNZ Huddle space.<sup>17</sup> During the workshop weekend two PowerPoint presentations introduced attendees to the principles of capability, performance, assessment, scope and regulation, and standard setting.<sup>18</sup> These presentations helped the attendees get some training and orientation in how standards should be developed, as it was anticipated that, although they might have skills in paediatrics, they were less likely to have skills in standard setting.

The first day of the workshop focused on revising the capabilities document (as noted above), while the second day focused on identifying knowledge areas required for paediatric practice. Identifying an appropriate depth of knowledge was recognised as being challenging. Some knowledge is more relevant, and for some clinical scenarios a greater in-depth awareness is required.

If one is only ever seeing a child who is fully diagnosed, on a full treatment schedule from the medical practitioner, and who is being brought to you for simple symptomatic relief from a non-life-threatening minor mechanical trauma, this may require a different knowledge field and depth than if you are constantly seeing children with no prior medical and diagnostic screening.

This is especially the case if that child also presents with symptoms that may be health-disease related, as opposed to minor strain and sprains, and which may require urgent and prompt action. This requires an additional, or different, depth of knowledge and a different level of engagement in terms of interpretation and analysis.

In this context, how osteopaths screen, and what skills, knowledge and attitudes they need, are dependent on the individual clinical situation, and it is as much about how the osteopath manages that clinical uncertainty as it is about what knowledge they actually have. Initially they are required to have enough knowledge to triage the situation, such that those

<sup>17</sup> See Data and Communications folder, part two, item 9.

<sup>18</sup> See Data and Communications folder, part two, items 10 and 11.



immediately requiring management by others, or diagnostic screening and analysis that are not possible within an osteopathic consultation, are identified. Thereafter they are required to have a broad understanding of common conditions and situations, and those factors which, even if less common, are serious and therefore should not be 'missed'.

The group considered that clinical context, clinical complexity and the point at which the osteopath first engages with the patient (along the timeline of that person's overall presentation, illness or problem since its occurrence or emergence) are all very relevant to knowledge requirements (see **Error! Reference source not found.**).

There was some discussion on the depth required for a range of medical knowledge areas, and data was gathered on the prioritisation of topics and indicators of depth. These included those that are unnecessary for common osteopathic practice (e.g. paediatric anaesthesia), and the in-depth knowledge required in areas such as rheumatology.<sup>19</sup>

There was also discussion about the knowledge requirements when a patient is being seen for a minor mechanical sprain and they have a concurrent medical condition. If one is seeing a patient directly for a medical condition, again there is a hierarchy of knowledge in the sense that one might be giving gentle and low-risk symptomatic relief and advice/support only. If one is trying to intervene in the progress of the medical condition itself – such as the recurrence of and morbidity associated with a chronic series of otitis media episodes and their impact on speech, hearing and neck movements, or with a very sick child, such as one recovering post-operatively – then the depth of knowledge required is much greater. Thus the discussion touched on issues of personal professional scope as opposed to the profession-wide scope.

Finally, there was discussion on the grouping – or otherwise – of paediatric knowledge fields. It was recognised that some osteopaths don't want to treat children at all, some don't want to treat those under five or those under two, and some want to treat all children except babies, or want to only see babies. Age splits of under one year, over one and under five years, and over five years were agreed upon. There was some discussion on the nature of the post-natal check that many osteopaths do on babies, and the reasonableness of expecting new graduates to have the skills required to safely and effectively perform such an examination. No conclusions were reached at this point in the project.

#### Comment

Role layering, issues of clinical complexity and depth of clinical engagement are closely inter-link

See later in this report for further discussions on triage and clinical complexity.

## Small group work from April to June: 'common conditions'

Following the workshop, volunteers were sought to continue exploring common conditions and knowledge areas, and to begin to prepare for a second series of workshops to be held regionally, in order to capture data from osteopaths in the North and South Island major centres: Christchurch, Wellington and Auckland.

The list of common conditions arising from the 2010 survey was circulated to this group,<sup>20</sup> and they were invited to log into a Moodle course work space hosted by the author. Initially the group used wikis to refine and prioritise this list of common conditions across the three age

<sup>19</sup> See Data and Communications folder, part two, item 12.

<sup>20</sup> Data and Communications folder, part two, item 13.



groups identified (see above).<sup>21</sup> (Note: the term 'conditions' is used from this point on, but this is a generalised term, and in the context of this report and project also includes symptoms and syndromes as well as conditions).

Once the list of conditions had been split into 'common' and 'not to be forgotten', the group members were asked to vote for their preference (i.e. to produce their top 10 conditions that are common, and the top 10 not to forget, for each age group). This was done through another SurveyMonkey instrument.<sup>22</sup>

Next, they were asked to identify the type of expectation or aim that osteopathic intervention may have for that condition.<sup>23</sup> For example, if one is seeing a child for growing pains, the aim may be to fully resolve the presentation, but if one is seeing a child for bronchiolitis, many osteopaths might consider that the aim would be just to support the child (such as by reducing muscular fatigue and aching around the chest and neck), and only some osteopaths might claim to be having an effect on the pathology itself.

### Comment

This report will not engage with the topic of evidence-based practice other than to acknowledge that this is essential, but point out that the evidence base for osteopathy is currently insufficient to provide agreed clinical guidelines on all areas of practice. Much practice is based on hypotheses arising from medical, physiological and anatomical foundations, and from clinical experience, rather than research evidence. Accordingly, this report cannot comment on the clinical reasonableness of any approach or osteopathic aim, but recognises that there are a variety of aims, which may vary depending on whether the osteopath is highly skilled or expert, or just a general osteopath with no additional or advanced skills.

**These lists formed the basis for the content of the work for the remainder of the project.**

### Patient information and case templates

Once a range of conditions had been identified, it was necessary to capture some standardised and some real case data. In June 2013 a series of templates was developed to allow participating osteopaths to indicate the relevant knowledge and skills for some or all of the chosen conditions, and another invitation was extended to all registrants to attend the regional workshops – one day each in Christchurch, Wellington and Auckland – in July.<sup>24</sup>

Two types of templates were developed.<sup>25</sup> One focused on a select group of the capabilities criteria, to capture data relevant to information retrieval and case analysis specifically. The basis for choosing certain criteria originated in the development of assessment tools for the overseas-trained osteopaths credentialing system developed between OCNZ and ANZOC (mapped against the previous version of the capabilities document). In that assessment project, certain criteria were identified as being able to be captured using written test items (i.e. key features and extended matching questions).

The project now wanted to be able to gather raw data from which content and knowledge areas could be sourced, and then used in developing written test items for paediatric practice. This data would also be able to inform curriculum planning at a later stage. The other template

<sup>21</sup> Data and Communications folder, part two, item 14.

<sup>22</sup> Data and Communications folder, part three, items 16 and 18 for top 10 lists across the age groups for common and for not-to-be-forgotten conditions.

<sup>23</sup> Data and Communications folder, part three, items 17 and 19. The aims for each age group are again shown, in a better chart form, including number counts, in item 15.

<sup>24</sup> Data and Communications folder, part four, item 20.

<sup>25</sup> Data and Communications folder, part four, item 21.



required anonymised actual case information drawn directly from real clinical cases seen by the participating osteopaths.

The first template provided data on standardised patients with a given condition. In all, 31 completed templates were returned, capturing data via 104 templates relating to 31 conditions.<sup>26</sup> The invitation to participate in the July workshops indicated that there were 30 conditions to choose from (a list gave the top five common, and the top five not to be forgotten, for each of the three age groups). Most templates returned related to this list, although a couple were sent back with additional topics, which were retained for use in the project. All data was deemed important to include. See Table 1 for a summary.

Table 1: Top five conditions across the age groups

<b>Under one year of age</b>		
	<i>Common conditions</i>	<i>Things not to forget</i>
1	Colic	Torticollis / altered neck movement
2	Birth trauma – give your definition in your template thanks	Congenital scoliosis
3	Plagiocephaly / altered head shape	Shoulder dystocia / brachial plexus injury
4	Congenital hip dysplasia	Respiratory distress syndrome / bronchial dysplasia
5	Post-natal check (the 6-week 'well baby check'). Note: give some thought as to which osteopaths are able to do this – we will discuss this issue in July.	Meningitis
<b>Over one year and under 5 years</b>		
	<i>Common conditions</i>	<i>Things not to forget</i>
1	Neck pain	Juvenile scoliosis
2	ENT (e.g. otitis media, acute or chronic)	Perthe's disease
3	Minor mechanical trauma (state body area you are thinking of in your template)	Dyspraxia
4	Headaches	Non-accidental injury
5	Asthma	Juvenile RA
<b>Over 5 years of age</b>		
	<i>Common conditions</i>	<i>Things not to forget</i>
1	'Growing pains'	Adolescent scoliosis
2	Osgood Sclatter's	Spondylolysthesis
3	Sever's syndrome	Slipped upper femoral epiphyses
4	Patello-femoral syndrome / chondro-malacia patellae	Learning and developmental delay and/or autism spectrum
5	Post-fracture rehabilitation	Glandular fever

For the actual case data, 13 cases were supplied in the under-ones age group, one in the over-ones and under-fives, and 17 in the over-fives.<sup>27</sup>

A PowerPoint presentation was also circulated to help participants prepare, and to orient them to outcomes from the earlier stages of the project.<sup>28</sup> Some of the participants were the same as those attending the February workshop (some of whom had also been undertaking the preceding small-group work), but others were totally new to the project. This helped

<sup>26</sup> Standards of Care case templates for the common and not-to-be-forgotten conditions folder.

<sup>27</sup> Case Presentations folder, parts one, two and three.

<sup>28</sup> Data and Communications folder, part four, item 22.



information spread and knowledge transfer, and also helped increase profession-wide awareness of the project.

Hence, as in February, sometime in the workshop was spent reviewing issues, answering questions and attempting to clarify issues and allay fears. The principal fears were that the OCNZ would halt paediatric practice, that it would restrict it to those who had a Master's qualification, that it would require everyone to take a high-stakes exam to continue to see patients, and that it would place unacceptable continuing professional development constraints on ongoing practice.

## The July workshops

The activities over the three days used consensus-building methods loosely based on card sorts, mind mapping and focus group work. The data went through several iterations, with each workshop expanding and developing the work from the preceding day. Large sheets of paper were distributed, and ideas were workshopped and summarised in small groups and then stuck on the walls around the room so that everyone could review the issues.

The first workshop began by briefly reviewing the osteopathic principles and philosophy, and the point was made that paediatric practice, as it is regulated in New Zealand, is not technique- or philosophy-dependent.<sup>29</sup> It is possible to use a variety of approaches, and no one is necessarily better or more appropriate than another, aside from issues relating to tissue state, pathology, patient demeanour, age, or other relevant factors, which may rule out one or more techniques in any given situation.

It was noted, however, that for the examination stage of the case analysis in the osteopathic consultation, the sole use of 'osteopathy in the cranial field' or other indirect approaches was inappropriate. There must be, where clinically indicated or where possible, use of other manual, orthopaedic or clinical screening tools in order to be deemed to have conducted an appropriate and effective clinical examination.

When it comes to the treatment of a patient, it was accepted that here one can employ much more discrimination in personal professional technique choice, and so one modality of technique can be employed on its own if desired at this stage. (The caveat was that a different technique choice might be more efficacious, or might more quickly achieve outcomes, but this issue would be dealt with in gaining informed consent from the patient at the time).

The workshop then looked at the top five of each of the common or not-to-be-forgotten conditions for each of the age groups.<sup>30</sup> It also considered the post-natal or well-baby check, which typically occurs at around six weeks of age, when the mother may bring her baby 'just to make sure it is fine'. Note that this check will be discussed in detail later in the report (see section 5).

Once the data sheets / maps were stuck around the room, there was a round robin to review and pass comments on the data captured, and it was revised where and as the group saw fit. Some of the case analysis templates and real case data templates previously collected were also used as points of comparison and reflection, and to aid the content development for the larger sheets. The data on these sheets typically took the form of either lists or mind maps (see Figure 2).

Also on the first day, a debate was started on what the aim or structure of the post-natal baby check should be. Initially people were asked to list the osteopathic concepts they applied to this consultation and to list the typical things they included as part of their 'check'.<sup>31</sup> Everyone wrote down their own points, and these were collated and a list of items produced that captured

<sup>29</sup> July workshops data folder, point A.

<sup>30</sup> July workshops data folder, point B.

<sup>31</sup> July workshops folder, point C.



all the suggestions. This produced a long and diverse list of concepts and examinations for inclusion.

Some of the osteopaths in the workshop could not understand what some of the others had included, which raised the question of intra-professional terminology and communication. However, this is a very well-known and common problem within osteopathic circles worldwide, so it did not pose a problem for ongoing data collection. Queries were clarified within the group, and then it was decided to identify what 'should' be included: not necessarily what each person did themselves, but what the core elements of case analysis and examination in the post-natal check should be. This second iteration of data captured a more concise and useable version, and a picture of what a post-natal check should include began to emerge, which was then voted on for prioritisation.<sup>32</sup>

A summary mind map for the baby check and what its overall aims are was created,<sup>33</sup> some notes on inclusions in a paediatric case history sheet were identified,<sup>34</sup> and a second workshop repeated the osteopathic concepts and examination checklist data for reference.<sup>35</sup>

By the end of the three days of workshops in July a series of mind maps had been drawn out, which were then used in support of the remainder of the project.

By this stage a considerable raw data set had emerged, giving insight into roles, underlying knowledge areas, issues for depth of clinical engagement, and details on the nature of osteopathic practice relating to children. The breadth of general epidemiological knowledge and key factors to consider in basic clinical analysis leading to differential diagnostic considerations was demonstrated appropriately, as was an understanding of red flags and risk factors in various presentations.

At this point it became clear that although the knowledge areas were easy to define and elaborate, the depth of knowledge required and the experience and skilfulness across a range of screening tests were still unclear. In other words, the standards required for this stage of clinical analysis were uncertain, principally because the role of the osteopath in screening versus diagnosis in various paediatric conditions/presentations was still unclear among those participating in the project.

For example, everyone agreed that tympanography is necessary for the management of otitis media and glue ear-type of presentations. However, should the osteopaths, as a baseline of competence, be able to perform this test, or just understand its use in diagnostic strategies?

When considering this and how to move forwards, if one establishes a set of roles, and then establishes knowledge and skills for these, the standards required for competent practice in each role can be easily determined. Test items can then be developed and used to benchmark practice.

Benchmarking is the process of comparing a practice's performance with an external standard. There is little data on benchmarking in osteopathy, and what there is may not be setting standards for clinically applied analysis and practice considerations, but for basic science or pure unapplied knowledge. Such knowledge areas are not relevant in themselves to the determination of capable practice, or for comparing the frequency of use of types of clinical assessment tools across various osteopathic training programmes (Moore et al., 2014).

Benchmarking is an important tool that can be used to motivate practitioners to engage in improvement work and help members of a practice understand where their performance falls

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<sup>32</sup> July workshops data folder, points D and E.

<sup>33</sup> July workshops data folder, point F.

<sup>34</sup> July workshops data folder, point G.

<sup>35</sup> July workshops data folder, point H.



in comparison to others.<sup>36</sup> Benchmarking can stimulate healthy competition among peers who otherwise work in isolation, as well as help members of a group practice reflect more effectively on their own performance.

If standards are already set, one can run a benchmarking exercise to track alignment to those standards, or utilise various standards and benchmark which of these is the 'best fit' for commonly understood standards, as they are presently applied by osteopaths. Then one can consider which standards are those that should apply.

### Alignment of standards and test items

Ultimately, if one is developing a credentialing system, such as might be considered by the OCNZ to determine endorsements for various scopes of practice, then the test items in that credentialing exam must be aligned to the required standards (i.e. they must be appropriately benchmarked).

It will be necessary, if such a circumstance arises, for any credentialing exam to be aligned to the *Capabilities for Osteopathic Practice*, published by the OCNZ, and detailed approaches to ensuring appropriate alignment can be explored at that time.<sup>37</sup>

The osteopathic profession was in a challenging position. It had a set of standards for paediatric practice (the capabilities developed in the February workshop) that were not understood widely in terms of what appropriate performance would look like. In other words, when judging clinical practice, what should one see on observation and what should one be able to elicit on scrutiny of the knowledge base and clinical analysis processes?

A type of benchmarking approach was decided upon, and a circular model was adopted, starting with the writing of various written test items.

## The October workshop

### Written test item pilot

In preparation for the October weekend, various written test items (key features questions and extended matching questions) were developed to pilot during the October weekend.

The knowledge fields identified with the conditions maps were used for content considerations, the case templates were used as themes and clinical scenarios within the test items, and item stems and choices were indicated by the processes or knowledge fields that osteopaths were saying they should incorporate (indicated by maps and other data gathered). A six-question key features paper and a six-question extended matching paper were developed, each with three themes or clinical scenarios embedded in them (resulting in 36 test items in total).<sup>38</sup> Clearly this would not cover all the required paediatric practice knowledge, but it was designed to illustrate one or two areas, to help attendees understand the process of standard setting.

The attendees sat the test blind and answered it in 'real exam conditions'. Thirty attendees took the test on the October weekend, without conferring, and then, with the papers anonymised, the papers were redistributed (so that no-one marked their own) and items were marked according to a predetermined schedule. The raw results were collated.

<sup>36</sup> Module 7: Measuring and Benchmarking Clinical Performance, *Agency for Healthcare Research and Quality*, Rockville, MD, 2013. Accessed at <http://www.ahrq.gov/professionals/prevention-chronic-care/improve/system/pfhandbook/mod7.html>

<sup>37</sup> A useful primer might be this report, although a wealth of other literatures exists: R. Rothman, J.B. Slattery, J.L. Vranek, Achieve, Inc., L. B. Resnick, *Benchmarking and Alignment of Standards and Testing*, CSE Technical Report 566, CRESST/University of Pittsburgh, 2002. <http://cse.ucla.edu/products/reports/TR566.pdf>

<sup>38</sup> See Data and Communications Folder, Part Four, items 26 and 27.



Then the group gave general feedback on the test items and proof-reading issues, and on the basic fairness and appropriateness of the types of questions included. The comments were noted, and a slight revision for spelling or omissions etc. in the written items was made.<sup>39</sup>

Next, a modified anghoff exercise was run, meaning the attendees were asked to determine what percentage of *borderline* competent candidates (osteopaths) would be able to answer any particular part of a question. People had to openly debate, vote for and come to a consensus about what the final agreed anghoff would be for each item.

This is one stage in people understanding what standard setting is all about. Many of the attendees had been with the project for a year at this point, and had had several presentations about standards and competence, and so they had some idea, but none had previously worked in any real way with standard-setting exercises and engaged with what the term 'borderline candidate' actually means.

Because people may not understand what borderline means, or may not be competent themselves, or indeed may be experts but not able to 'think down' to borderline anymore, there are many reasons why the standards indicated by the anghoffs of the pilot may not be 'real'. But it was important to test whether the process could be used as a learning tool through which more appropriate standards could be fleshed out, so that more accurate, profession-wide benchmarking could be undertaken.

So, during the October weekend a series of test items were anghoffed to set the cut-off score (the indicative pass mark), and then the papers were re-marked to see how many of the attendees had 'passed' (how many were 'competent', as framed by the content of the 12 questions).

### Pilot results

More people passed the extended matching question paper than the key features paper. In other written test credentialing exercises (such as that employed by ANZOC in the first phase of the competency programme assessment for overseas-trained osteopaths), the key features paper did seem to be passed by fewer candidates overall. Thus the present results were 'consistent' with that overall impression.

The spread of grades formed a uniform bell curve, indicating a normal spread of marks (i.e. most candidates were clustered on or around similar marks, with some being 'very good' and some 'not very good'). The results, by candidate (attendee) and by item, were then put into an Excel spreadsheet and analysed to see which items were answered more or less correctly than others.<sup>40</sup>

When discussing the results and looking at the spread of which questions were answered 'correctly' or otherwise, it became clear that this type of exercise would make a very good tool to explore standards. In using a pool of items that were initially set at one standard level, people could debate them and discuss (through the borderline anghoff method) the appropriateness and reasonableness of the items.

Other health-care professionals could also be brought in for their opinions on what content should be contained within the test items if a certain standard or performance was aimed at. That way, a gradual consensus could be arrived at on what the standards *should* be, as opposed to which standards currently apply, as understood by osteopaths.

The participants in the project were clear that they understood that what they might currently do is not always best practice, and that while some people in the pool of attendees were recognised by their peers as being 'expert' in various areas of paediatrics, there was a general acknowledgement that not everyone in the room (and therefore, by extension, across the

<sup>39</sup> Written test items and DOPS / OSCE results, Collated Data folder, items 10, 11 and 12.

<sup>40</sup> Written test items and DOPS / OSCE results, Collated Data folder, items 1-5.



profession) was at an ‘expert level’, and that there was no immediate agreement as to what the minimal levels of competence should be.

#### Comment

Using written test items as an assessment for learning’ (i.e. a low-stakes formative assessment process for highlighting areas of learning needs) would be a very good way of illustrating desired standards across the profession. This is because it gives osteopaths a low-risk opportunity to become aware of issues, and to begin to reflect on and self-assess their own competence prior to any more formal high-stakes credentialing. It would also give ample time for people to begin upskilling, and to learn, within a reasonable timeframe, the issues that are relevant to them, and to engage in a change process that is less threatening, and therefore hopefully more successful.

Further commentary on what more can be derived from the written test items is contained within the main discussion section of the report (below).

### OSCE / DOPS event

Not all capabilities can be explored using written test items, so other tools commonly used are OSCE or DOPS. OSCE (objective structured clinical exam) involves using standardised patients. Various stations are set up, and candidates go to each station in turn, performing a clinical screening exercise or undertaking various procedures or tests. Sometimes a variant of this is to do a DOPS – direct observations of practice skills – which is normally done on real patients.

During the October weekend it was decided to hold a mini OSCE exam. There were too few stations and not enough candidates for a real piloting of issues. But the exercise was a good learning tool, and a way of gauging, in a very primitive but effective way, what people did when they were asked to perform various screening tests commonly used in paediatrics, and which the project had agreed were ‘a necessary part of appropriate clinical practice by osteopaths’.

The OSCE stations each had a guidance sheet for markers, giving information on the expected performance of the candidates, and marking sheets were developed to capture the outcome (albeit in a rough sense).<sup>41</sup> While most participants performed well at some stations, some were weak in key areas (such as the cardio-respiratory exams of babies). The key points arising from the OSCE data will be discussed later in this report.

#### Comment

The initial results lent weight to the conclusion, formed in discussions throughout the project that while osteopaths might know the right tests to do, their performance of them, and therefore the reasonableness of any conclusions they might make diagnostically, was not so certain. Note that some tests were performed well, so this is not a comment about all osteopaths, but it is a result that warrants further consideration.

### Process mapping as opposed to a ‘model osteopathic approach’

The other exercise in the October weekend involved considering the maps of clinical ‘pathways’ or processes in more detail, making final comments and adjustments on some of them, and determining if some form of guidance or procedural outline could be constructed for various common clinical conditions seen by paediatric osteopaths (or conditions not to be missed). This would allow the identification of what a competent clinical process might look

<sup>41</sup> Written test items and DOPS / OSCE results, Collated Data folder, items 6–9.



like when an osteopath is considering whether to treat a patient, and in what way, and at what point to refer on.

There is an accepted (among the profession) variation in the individualised application of osteopathic principles in practice, so no one osteopath would do exactly the same thing on any given patient. This is in marked contrast to standard medicine, where clinical approaches are designed to eliminate variation, where possible.

<b>Comment</b>
It was felt by the end of the project that while variation in treatment is justifiable, variation in assessment should be less so, and should contain minimal components to ensure effective risk assessment of the patient, and the 'minimum roles' discussed earlier are performed in an appropriate order. See "Role layering and depth of clinical engagement".

A model already exists, the Clinical Health Pathways, developed by the Canterbury Health Initiative, and this has already been applied across a variety of paediatric conditions. The pathways are aimed at medical and allied health professionals who need guidance on the overall best way to progress through the clinical management of various conditions. Such pathways are not clinical protocols, or guidelines on exactly which treatments to give, but rather aim to help the practitioner know the relevant steps to take at each point, and the key facts to consider or look out for to ensure that clinical management is processed appropriately.

Some of these Canterbury pathways were reviewed in the October weekend, and it was agreed that if we could produce versions suitable for osteopathic practice, these would be very useful points of reference and would in themselves give clear guidance as to the reasonable standards of care expected.

The workshop attempted to develop several pathways and made good progress for the condition of glue ear, as an example of what a template might look like. Others included colic and torticollis. It would be expected that if these are developed further they could be populated by medical and osteopathic areas, building up a picture of what basic, reasonable and minimally competent osteopathic practice should be, including the management of various conditions and presentations (see Figures 3 and 4).

<b>Comment</b>
Although these pathways will need further work, they are advanced enough to ensure a small committee or peer group could achieve consensus very quickly and use them as templates for all the other common conditions highlighted in the project, incorporating all the other mapping data gathered to date, in conjunction with the case templates and the conditions templates.

## **4 Discussion of outcomes**

### **Knowledge and skill area suggestions**

The project has identified the knowledge, skill and attitude areas (KSAs) that are required to develop specific curricula. It is important, in this context, to understand what is meant by content and curriculum, and what the differences are.

The KSA suggestions can ultimately act as a basis for entry-level training programmes that wish to incorporate the relevant outcomes in their existing programme. They can also be used for continuing professional development courses for recent graduates, not yet upskilling, who wish to expand their clinical gaze or attain the required baseline levels of capability in paediatric work if this was not included in the pre-entry level programme. Each institution



constructing a qualification will need to map its overall curriculum to align it with, and incorporate, the paediatric curriculum suggestions.

Post-registration, once an osteopath is engaged in their own variable and diverse clinical practice, they will gradually have more varied learning needs (with respect to any particular curriculum) than when they exited a programme. In addition, there is individual variation in the learning needs in currently registered osteopaths in New Zealand. Any existing training programmes and qualifications available outside osteopathic education at a pre-entry level or a continuing professional development level, both within New Zealand and globally, are unlikely to be a suitable 'one size fits all', 'off the peg' option for upskilling or credentialing all current registrants working or wishing to work with children in New Zealand.

Hence, unlike the Western Medical Acupuncture course for the needling endorsement to practise, in paediatrics a variety of training options are likely to be required.

Registrants wishing to provide evidence of attaining competence in the paediatric knowledge field encompassed by the KSA suggestions should map those suggestions against their own educational biography and experience, and reflect on where they have not had sufficient training. They then need to seek courses that can help them address their learning needs. A self-assessment model could initially be the simplest and most cost-effective approach.

Another suggestion could be to survey the profession, asking them to map their existing knowledge and skill sets against the curriculum suggestions, and then audit the responses to provide an indication of what type of training programme might best serve the profession 'as a whole' (i.e. one oriented to the most common areas of omission or lack). This clearly could be a course development issue and cost for institutions or individuals to develop a programme, but it is one the OCNZ may consider, because it could help indicate the range of skill shortfalls in the current workforce.

### **Considerations**

The draft basic KSA areas to include in a paediatric learning programme are contained in Appendix 2

## **Who should design a curriculum or be involved in its delivery?**

When considering curriculum design, the following is useful background information.

Teachers may be influenced by their understanding of curriculum and the underlying philosophical approaches to its design, and so developing learning objectives can be open to bias, and curricula may vary as a result (Morcke & Eika, 2009).

The osteopaths who contribute to curriculum design may have variable approaches to curriculum design, even within an educational institution. This factor may be relevant when considering who should construct curricula. The team responsible will need to explore this issue in advance to enable them to bring consistency to the curriculum, and therefore help students' preparedness, performance and attainment of competence, as has been shown to happen in other medical institutions (Bleakley & Brennan, 2011). In addition, if one considers that a necessary part of the professional support for paediatric practice is some kind of clinical placement, or 'external sourcing' of content delivery and mentoring, then this issue of curriculum design and its effect on learning can be critical.

While clinical placement seems an attractive component of learning, we need to consider workplace capacity for supervision or clinical placement provision, especially if the learner is a new graduate. Many health-care systems struggle with this issue, and so there may be insufficient supply to adequately meet demand (Hays, 2013). Note that both recent and long-term practitioners may have quite specific and different learning styles and needs, so educational input and its assessment must be able to account for this (Hays et al., 2002).



This adds weight to the view that using clinical placements adds to confusion about learning directions and approaches (by the people offering the placement, as opposed to those participating in it). This can have an impact on clinical learning, and therefore preparedness for practice (Grealish & Smale, 2011), of the person participating/attending. Current trends in learning theory that may accommodate this issue are of interest here, and will provide a useful background for the OCNZ to consider when developing its own continuing professional programme of development, support, mentoring, precepting or assessment programmes:

Socio-cultural learning theories, particularly situated learning, and communities of practice offer a useful theoretical perspective. They view learning as intimately tied to context and occurring through participation and active engagement in the activities of the community. (Mann, 2011)

In this context, the peer support groups, and their engagement with Pebblepad to aid group learning and engagement, are a positive step which should be pursued.

### **Are there core factors that all osteopaths need to be upskilled in?**

The project has identified an emergent core KSA framework (developed through the paediatric project so far) to indicate curriculum areas likely to be weak or that require upskilling in many osteopaths. This framework covers common conditions that have been identified as relevant by the project.

#### **Consideration**

Topics that are most likely to be required by most osteopaths are:

- management of the under-ones across a wide spectrum of considerations
- critical thinking
- case history-taking, information retrieval, tests and screening
- ethics of child health care
- basic health programme provisions within New Zealand health care
- child health systems and support networks
- mental health issues for children
- Māori paediatric health-care issues
- adolescent health issues
- communication and interpersonal skills in an integrative health-care arena.

Another key topic could be, 'How to evidence your notes?' in other words, how to show that you are going through the appropriate process and are acting capably according to reasonable clinical analysis and interrogation.

While the second list of topics (below) are also recognised as 'core knowledge', these tend to be more variable in terms of individual capability, as some people have apparently undertaken a degree of upskilling whereas others have not. Across the osteopaths who participated in the project, it seems that a person is either expert in the topic, due to existing clinical exposure, or they have some knowledge due to a particular clinical interest that they are wishing to develop.

Accordingly, although it is possible to design a set of criteria against which current registrants can be credentialed, the outcome of such an exercise is likely to confirm that most osteopaths have variable learning needs, and that any identified omission or lack of skill or under-performance of clinical capacity is likely to be very variable across the profession.



As result, the learning needs of individual practitioners are likely to be so diverse as to render any specific educational programme insufficient to meet all their individualised learning needs across certain knowledge and skill areas.

That said, a series of possible modules or papers could be identified that people can do on a personal 'as needs' basis (initially through their self-assessment); for example, in the following types of knowledge areas:

- neonatal medicine
- birth trauma and neurological compromise
- infective, genetic and congenital pathology
- medical screening and tests
- imaging in the paediatric population.

Before discussing these options, we need to consider what depth of clinical knowledge an osteopath should have in order to operate safely in a paediatric setting, as this would relate to the development of any assessment tools for a credentialing exercise to illustrate attainment of capability. (Note that we will return to approaches to assessment later.)

### **Are osteopaths currently practising according to the (newly developed) capabilities required?**

The fact that capabilities are 'newly developed' should not indicate to the reader that capabilities had not already been identified and published within New Zealand osteopathic practice. There have been a set of capabilities since 2011, and at a workshop in February 2013 these were scrutinised and edited to ensure they reflect a paediatric emphasis where this was either missing or required elaboration.

Having set the capabilities, however, it is useful to reflect on existing practice with respect to these capabilities. The following questions can be asked:

1. Are osteopaths 'going through the right motions' in terms of broadly following capabilities?
2. Is there any individual evidence or evidence of commonality of approach that indicates that osteopaths are
3. broadly aware of the content of the capabilities?
4. If they are broadly following them, is it possible to determine that the standard is set appropriately?

#### **Consideration**

The answer to questions 1 and 2 is yes. Question 3 cannot be answered in the same way.

As discussed, we don't yet have a consensus on appropriate standards, but if we take a snapshot of current actions in practice and 'test people', even in a very minimal way, we can see how current common practice begins to match up in comparison to our emerging understanding of what standards *should* look like.

In order to understand how that might be achieved, the project needed to consider how you get from capabilities to knowledge areas, to standards, to assessment, and then back again to capabilities: it all comes back to roles and scopes.

This requires us to revisit the topic of roles and layering, and to really understand the implications for standards based on what role differentiation might lead to. In this context, we now return to the topic of triage, which was introduced above.



## Triage

The depth of clinical knowledge (or KSAs) required is a complex topic and has been one of the main focuses of the project. This has involved clarifying that there need to be differing depths of knowledge for different clinical scenarios, as well as developing draft attempts at identifying exemplars of the minimum levels of clinical KSAs required.

To introduce the topic of clinical depth and clinical complexity it is useful to start with a brief discussion of the idea of triage in clinical practice.

Triage is a term historically applied in crucial care and emergency situations, but it is beginning to take on additional meanings in health-care systems as part of the drive to establish more effective ways to channel patients, and therefore resources, to the most appropriate and cost-effective means of clinical assessment and management.

Nowadays the term is used in medicine and allied health and nursing to mean slightly different things. Telephone triage is one example of a new meaning: telephone triage can still involve emergency cases, but it is often used to sift out less serious matters (in terms of potential adverse health outcomes) to avoid pressure on GPs or specialists/surgeons.

Triage services now apply in many spinal units, where physiotherapists, for example, triage chronic low-back pain people into those with non-specific low-back pain and those with radiculopathy (Bath & Pahwa, 2012). This is where the concept of 'diagnostic triage' has emerged.

Clinical guidelines also include the concept of diagnostic triage, which is about prioritising all patients, not just those in an emergency situation (Koes et al., 2010). This type of triage is usually done by extended-scope physiotherapy practitioners or advanced nurse practitioners.<sup>42,43</sup> Self-triage by patients is also a consideration these days, and this point is picked up elsewhere in the report.

Diagnostic triage is linked to differential diagnosis and clinical analysis, but usually comes first. People are then differentiated into services that can either more accurately diagnose them, or manage their cases more efficiently and effectively, or can come later in the clinical pathway, when a case review is required. In this way triage acts as a service screen point, or as a clinical review point.

Diagnostic triage can be performed in a telephone triage setting, often by advanced-trained nursing staff, where symptoms are sorted or compared according to pre-prepared protocols. This helps to direct a patient to where they can receive the most appropriate diagnostic services, or, indeed, whether in the short term they might be better off to wait, unless conditions or symptoms change.

In an osteopathic setting, diagnostic triage can be viewed as a 'complex intervention' requiring pre-prepared protocols or guidelines. These help the osteopath determine if they are able to manage the patient themselves, or whether they need additional resources, personnel or services in order for the patient to become appropriately diagnosed and managed. Such protocols are something that osteopaths should be clearer about, so that novice or general scope osteopaths can be guided into whether they should engage with the patient clinically or not.

A general scope osteopath not particularly skilled in paediatric medicine may essentially be performing a triage service for patients, and is thereby operating at one end of the diagnostic continuum. At this point on the continuum it is recognised that they are not sufficiently skilled

<sup>42</sup> See this NHS website for a brief outline on how they use triage services: <http://www.roh.nhs.uk/patients-and-visitors/therapy-services/triage-clinic>

<sup>43</sup> See this course outline on telephone triage in a nursing situation to give an overview of the way telephone triage can be applied, and what its roles and boundaries are: [http://www.nursingceu.com/courses/290/index\\_nceu.html](http://www.nursingceu.com/courses/290/index_nceu.html)



to identify possible diagnoses accurately, but they have sufficient training or knowledge and skills to risk-manage the initial consultation to at least identify patients who may require directing to different health personal to perform the appropriate diagnostic services.

Also, at this point on the continuum the osteopath can identify those who are suffering from functional disorders that are low risk and can be more reasonably managed within an osteopathic health care setting without further initial clinical review from other professionals. Hence the KSAs for a general osteopath performing risk management diagnostic triage will be less in-depth than those for an osteopath who wishes to go beyond this, and to engage more personally in actual diagnostic discrimination, rather than just being a referral portal.

Such layering of diagnostic discrimination can be identified as the osteopath moves along the diagnostic continuum towards ever-increasing clinical complexity, and is exposed to clinical situations where they take more individual professional risk in determining appropriate pathways of care for a given patient. If they are operating at this end of the diagnostic continuum, then clearly they require a much more in-depth level of KSAs than the general osteopath performing light-touch diagnostic triage as a referral portal.

### Testing along the diagnostic continuum

To evaluate where different people are located on the diagnostic continuum, different questions or tests can be developed that probe knowledge and skills. This testing can relate to the initial screening point of the timeline, or further along, where questions or tests can see if there is sufficient knowledge to discriminate and begin differential diagnosis. Testing could also relate to the interpretation of screening results, for example, or eventually test right at the other end of the continuum, for complex clinical scenarios with multi-layered and multi-personal care considerations, which an osteopath working in a clinically complex situation would be expected to handle.

Normally in assessment, many different types of assessment tools are used, such as a written test, multi-source feedback, reflective portfolios, OSCEs, and so forth. In the project it was not possible to do all of these things, but we did use two methods: the written tests and the mini OSCE.

When we put these together, we can see how additional information can be built up. Clearly the numbers involved in the October weekend testing events were in no way statistically significant, but they at least form a good point for discussion and reflection.

### Combining the OSCE and the written tests

If we look closely at the written test results, a few things can be noted. The extended matching paper contained questions about infants and babies, and the key features papers contained questions about children over five years and adolescents.

More people 'passed' the extended matching paper, although this style of paper *may* in general be easier to pass than the key features paper. This could be because of content, style of question, or the fact that the key features paper asks more clinically discerning information, rather than extended matching, which is more about pattern recognition.

That said, when one looks candidate by candidate and question by question, and even item by item within a question, the parts of the 'baby' exam that people didn't score so well in were 'heart rate' and 'what constitutes a normal respiratory exam'. They did better on questions about 'what is an abnormal finding'. So, basic physiological awareness may be in need of revision. In the OSCE, which had four 'baby' stations looking at cardio-respiratory exams, general spinal and hip exams, primitive reflexes, and head shape issues, it was again things like the cardio-respiratory exam that drew attention to issues such as lack of awareness of what 'normal' findings look like, making interpretation of screening tests more awkward.

The two following tables present the actual results. If you look at the right-hand side of the two tables, and read the commentaries, the ones highlighted in yellow are those areas that people



did not know as well. When considering standards, this helps to highlight areas that might require further testing or analysis if they are being used to scrutinise possible standards.

There are many layers to any standard-setting procedure, but it may well be that getting people to work through a range of written test items set at different levels of a diagnostic continuum would quickly indicate which items were set at the wrong standard and which ones were more appropriate to real practice.

The profession needs to continue to debate these issues, but the project has identified that this is a very good exercise to work through issues of standards practically.



Table 2: Overview of key features results

Key features: a range of questions for children over 5 years

Anghoff	Average actual		
50	51	Scenario 1	Teenage hip pain – hip exam findings – vignette had a part missing but people got the point anyway
25	15		Placement of bursae around hip (anatomy question)
75	83		Appropriate technique choice for a partly avulsed psoas tendon
50	50		
25	43	Scenario 2	Typical developmental landmarks of healthy 6-year-old
75	72		Identification of conduct / hyperactivity / peer interaction indicators for normal social development
75	46		Common sites of fractures indicative of non-accidental injury
58	54		
25	8	Scenario 3	Imaging question – markers on X-ray for telling age of bones / skeletal maturity in teenagers
75	70		relating to curves and their directions in scoliosis
25	34		
42	37		
25	7	Scenario 4	Example of trick or out-of-context KSA question (what bits of a vertebra are the body parts of a scotty dog!)
75	0		Model answer not provided so couldn't be marked – question was symptoms indicative of ankylosing spondylitis in teenager
50	32		innervation of muscles from L5 nerve root
50	13		
50	46	Scenario 5	What findings indicate underlying disease in girl with headaches plus clumsy or menstrual types symptoms
25	10		Relevance of appearance of skin when someone has headaches
?	0		Couldn't give treatment options as no palpatory findings in vignette
25	19		
25	47	Scenario 6	Sutures and anatomy around temporal bone
25	48		Muscles attaching to eustachian tube
90	63		Relevance of changes in facial expression after long history of grommets for glue ear
47	53		



Table 3: Overview of extended matching questions results

## Extended matching – all baby and infant questions

Anghoff	Average actual		
75	54	Theme 1	What findings constitute a normal abdominal exam in an infant?
75	78		What findings are not in a set of 'normal' when palpating abdomen?
25	32		What findings are consistent with infant hypothyroidism?
50	55		
75	56	Theme 2	Normal findings of infant respiratory exam?
75	76		What are findings of abnormal respiratory function during sleep?
25	44		Findings consistent with diaphragmatic hernia
50	59		
25	26	Theme 3	Normal cardiac anatomy and physiology in infant?
25	38		What is incorrect infant cardiac anatomy?
25	33		Abnormal cardio-respiratory exam findings?
25	32		
25	15	Theme 4	Pick findings / symptoms related to pyloric stenosis in infant
25	33		What findings are inconsistent with pyloric stenosis?
25	37		Relating to abdominal exam but question wording not so clear
25	29		
50	27	Theme 5	Examination findings for caput succundum or cephalohaematoma
50	48		Findings consistent with deformational plagiocephaly
50	56		Findings indicative of cranial nerve VII palsy
50	44		
25	37	Theme 6	Findings of Horner's syndrome from shoulder dystocia
50	25		Differentiating neural palsy versus clavicle / shoulder fracture
50	39		Findings consistent with Erb's palsy
50	34		



## Standard setting: additional comments

Standard setting is a complex procedure, and it will take some time before standards are fully debated within the profession. It may be that standards developed at one point in time will subsequently be determined either to be too high or too low.

At this stage it is clear from the project that osteopaths are able to understand the process of standard setting, are able (with instruction) to begin to model appropriate performance indicators, and are sufficiently reflective as practitioners to identify standards that they feel are reasonable for their peers.

### Comment

Standard setting *has* to come from within the community of osteopaths. Osteopaths are capable of developing standards through appropriate use of evidence, and through consultation with experts outside the osteopathic profession and those with an interest in those standards.

## Using patients as part of the standard-setting procedure

One of the interesting things about standards is that we need to be careful to acknowledge the person to whom those standards are applied – the patient. The patient can have a role in standard setting, especially if we remember that practice is negotiated with a patient through a process of informed consent. They have a right to expect certain standards and can therefore give valuable feedback in the development of standards. They also have a voice in the observation or experience of how those standards are applied to them by osteopaths.

## Inconsistency in standard setting

Standard setting can introduce bias and error in a number of ways. One of the main reasons why the initial standards discussed in the project cannot be taken as absolute is that there was a clear variation in the capability profile of the participants in the piloting events and standard-setting exercises. The participants were known to come from diverse backgrounds and to have different skill sets and varying experience, and so naturally their standards would be variable.

However, the project was strengthened by this variation in the sense that those more ‘expert’ participants who might participate in a final standard-setting debate were given good feedback about what is practicable to learn or do at a base competence level. Experts have a tendency to forget what baseline practice looks like, and standards have to be set at this baseline for the general scope of practice.

Through this debate, especially through the October weekend workshop, the broad approaches and concepts to be contained within the care pathways became clearer.

As participants went around the room and debated the maps on the wall, and as they had the meaning of the maps presented to them by the small team working on that particular map, with everyone giving feedback, a broader understanding of what baseline competence should look like began to be easier to identify and illustrate.



This process of iteration and ‘voting’ had been started in the July workshops, and the maps that were initially the most debated or those that people could not agree were either good or bad examples of appropriate standards were brought forward to the October weekend. Interestingly, it was the adolescent health-care topics, such as Sever’s, Perthe’s and scoliosis, that were the least agreed upon in the July iteration, and the suck-and-latch topic was the only one in July all parties agreed could go forward without revision.

Disagreement did not relate solely to technical approach (e.g. cranial versus structural), but also to underlying pathological, anatomical and physiological knowledge, and the breadth of osteopathic approach that might seem ‘reasonable’. It should be noted, though, that the suck-and-latch topic, which everyone agreed was a fantastic example of what should be done, was not applicable as a baseline standard (or one that osteopaths could easily aspire to without marked extra training), because it was set at the ‘expert’ level. Very few people in the October weekend felt they could match the level easily within their existing skill set. This indicates a need to continually debate whether what is currently labelled as ‘expert’ is in fact that, or is actually what should be recognised as a baseline requirement.

As the paediatric project moves forwards there will be, at the very least, the need for some sort of professional review or ongoing debate about standards. If there are complaints or other issues, then someone will be called upon to make a case review or to judge the appropriateness of someone’s practice actions. Accordingly, there *must* be training on standards and the standard-setting of peer-assessors or paediatric preceptors for paediatric clinical review (whatever they might be called), and this is not something that can be done cursorily or as a one-off. Evidence always moves on, and so standards must continually be revisited. It is an ongoing professional debate, which all osteopaths are strongly encouraged to engage with now.

### How to apply standards as the profession continues to debate them

It may seem confusing to suggest that we should apply standards if they are not fully articulated. However, incremental and careful progress must be made, and the use of care pathways, in conjunction with testing and assessment events and learning opportunities, will help to improve awareness, lead to knowledge sharing and encourage practice change. This will lead to a reduction of clinical risk to the patient, which is a crucial consideration.

#### *Use of process pathways to minimise risk*

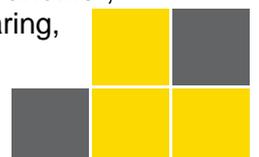
Process pathways are a simple way to reduce risk because they clarify key steps or processes that should be checked or undertaken at various points in a person’s management. Process pathways do not replace clinical analysis or differential diagnosis, but they may help eliminate error or omission. Their use in osteopathy globally is currently unexplored.

Process pathways also reduce risk because they help identify key areas of knowledge or skills that are required in order for the pathway to be followed by osteopaths.

#### *Identification of KSAs through the development of process pathways*

If a care or process pathway states, for example, that an osteopath should be aware that there are different clinical implications for a child with one blocked ear, perhaps as a result of otitis media, compared to a child with bilateral blockage, and that time of reduction in hearing is critical for other reasons (such as language, comprehension and literacy), then the KSAs would need to reflect this, and the curriculum could be identified accordingly.

Such pathways do not depend on individual osteopathic preferences or philosophical approaches. Indeed, they lie alongside but somewhat separate from them. Whatever palpatory findings or biomechanical problem one osteopath identifies compared to another, this does not negate the need to be aware that blocked ears in children limit their hearing,



and that if hearing loss is extended and bilateral and occurring at a certain age, then the child is at significant risk of language delay or developmental problems, possibly of a permanent nature.

So, rather than debating the differences of one osteopathic philosophy over another, the project identified the need to clarify care pathways in the first instance, and then to combine or incorporate common threads of osteopathic philosophy with them.

### ***Developing pathways and setting standards along the diagnostic continuum: further benefits of process pathways***

The project initially referred to the Canterbury Health Initiative Clinical Pathways Project and identified that there were many pathways that would be helpful in osteopathic practice and that could be taken 'as is' (given appropriate permissions being requested and/or granted), or developed with further additions or orientations to make them applicable to osteopathic practice (again, with permission, as required).

As pathways are further developed, it is clear that knowledge areas emerge (as discussed above). This requires debate on the skill set required at certain points, and how appropriate knowledge or skills would be able to be assessed or tested, and what they would look like, if observed.

In other words, the performance indicators could be debated, and one could, for example, come to a consensus that an osteopath must know how to perform and interpret an otoscopy with a high degree of accuracy (which would require a lot of training). Alternatively, one could require osteopaths to know what otoscopy is, and what the results mean, without having to do it themselves (or some other variation).

It would then be much easier to benchmark actual practice against the standards by comparing the processes osteopaths are using in their clinic, by testing the underlying knowledge and skills at each point of the process, and by people self-reflecting and self-assessing, on an ongoing basis, their competence against the standards, as indicated by the process pathways.

### **Additional roles**

If an osteopath were sufficiently skilled, could they take on additional roles beyond those commonly thought of as being embraced by the osteopathic scope of practice?

### **Osteopathic consultation time: an under-utilised resource to the health-care system?**

Advanced trained osteopathic clinicians could aspire to, or be used as a novel and very beneficial additional tool for, mainstream health-care provision in terms of screening services within the New Zealand health-care system, to help meet the demands on health-care workforce strains and lack of adequate provision.

One benefit could be through the use of the extended consultation times universally present in osteopathic practice for additional purposes, or to strengthen factors that are currently there but in a less defined or focused way.

Comparing the number of osteopaths per head of population and the time exposure of patients to primary health-care practitioners (GP's) compared to osteopaths indicates that people may spend a lot of time with their osteopath compared to their GP.

Osteopaths spend more time with a patient over two visits (approximately an hour, each session typically being 30 minutes) than a patient spends with their doctor over the course of a year (mean annual exposure in New Zealand), so the effects on patient outcomes in relation to time exposure of patients to primary health-care practitioners compared to osteopaths should be explored.



Time exposure to patients is known to be linked to the primary care service's ability to deal with chronic complaints and related health outcomes. With their longer patient exposure times, osteopaths are well placed to have a strong educational and potentially preventive role in health-care provision in New Zealand.

This could enable these advanced trained/credentialed osteopaths to act as an additional interface among existing and mainstream care providers, with three distinct aims:

- to act as an additional differential diagnostic point to support patients, or the case review point, in certain clinical scenarios – care pathways identified by osteopaths may vary depending on the position of the patient in existing or other (medical) care pathways, and so a triage approach could be utilised to identify a strategy for ongoing clinical analysis of the patient to determine the appropriate osteopathic care pathway for that patient, at that time
- to act as an additional educational and reassuring discussion point to help patient comprehension and encourage positive clinical outcomes through patient adherence to advice or treatment protocols already in place for mainstream health-care providers in New Zealand
- to act as a point of clinical review to help identify if a patient is still on the most appropriate care pathway, or if factors have changed or need reviewing in some way.

These are components the profession could explore further as standards in paediatric osteopathic health care become established.

However, for the purposes of the bulk of this project, it is clarification of baseline competence to ensure all practitioners are capable of the minimum in terms of risk management that is the important thing. The project has identified that one of the better ways of achieving this would be to develop care pathways for guidance, the development of which is discussed below.

### **Contracting or role expansion: the baby check**

Varying roles within this area not fully articulated, and hence require a different skill set to the standard 'osteopathic' biomechanical and biophysiological patient evaluation. Treatment components, which essentially just vary in depth and colour (novice to expert) rather than requiring a different content map. However, emergent roles have a 'baby check' as part of health-care provision to allow specialist osteopaths or those with a vocational scope to act as a third portal for patient access to specialist care as required or to perform (in a recognised way) a formal health-screening role.

Screening for discriminatory clinical and analytical/diagnostic purposes across the lifespan requires a different skill set to baby checks that look at basic sore heads and stiff jaws for mechanical feeding problems, for example.



## 5 The post-natal checking of babies by osteopaths

This topic has been placed right at the end of the document because it poses some difficult issues, the resolution of which may be challenging.

Checking babies is a routine part of osteopathic practice involving the very young. Often an osteopath has been seeing the mother throughout the pregnancy, helping ease discomfort and pain and helping her to understand how her body works in preparation for labour.

Birth (whether vaginal or caesarean) is physically stressful on both mother and child, and it is common for the infant to suffer some injury during the birth process. Many babies have very minor traumas, such as superficial bruising. Some may suffer moulding problems as a result of instrumental delivery, and some suffer severe tissue and vascular injury, with significant neurological complications.

Clearly, babies who suffer significant injury are managed within the immediate hospital and paediatric teams, and medical care can be given as required post-natally. More minor issues are monitored at home through the midwife or Plunket nurse, in conjunction with the GP, and onward referral to other practitioners as required.

Osteopaths feel that very gentle examination and potential treatment of the very young can help ease infant discomfort, make neck movement more relaxed or easy, and help the baby become calmer and more comfortable by easing muscular or myofascial strains that have been triggered as part of the birth process. Accordingly, they encourage mothers to bring their infants at around six to eight weeks of age, and to have them 'checked' for minor biomechanical and soft tissue stress and strain that might be giving them discomfort and therefore making them unsettled. Many mothers now bring their babies to be 'checked' even in the absence of any symptoms.

This post-natal baby check was debated many times during the project, and a lot of data was gathered. Initially, when asked why osteopaths do the check or what they are looking for, or what they are considering when doing their check, a range of diverse answers was given. Gradually, as the workshops reflected on the issues raised, it was clear that there were, in fact, two main reasons for the check: one when the baby *has* symptoms, and one when the baby does *not*.

### When the baby does not have symptoms

Osteopaths commonly stated that when they examine the infant and some tensions are found, the mother can then decide if they want those treated or not. The question of whether it is ethical to treat in the absence of symptoms has to be debated, and it must be clear that if tensions are found on physical examination, the case history and clinical scenario for the infant are closely re-examined to ensure that any small or emergent clinical factors were not initially overlooked, and that the baby does indeed have some small complaints that could reasonably be related to the clinical findings. In this case, treatment could be justified. If this cannot be determined or clarified, it is *not* ethical or safe to administer treatment when there is no clinical need.

To protect parents and their infants in these circumstances, it was gradually determined that something like a 'parent charter' could be developed to guide them in the general aims of the 'post-natal check', so that everyone can understand what can be reasonably identified in infants that are otherwise seemingly free of significant clinical issues. The osteopaths felt that there was a real clinical benefit that parents and infants should not be deprived of, but that the role of the post-natal check should be clarified.

The charter was not fully developed by the end of the project, but this could be done with minimal work by some small-group work in the near future.



If there is a routine screening event for minor mechanical strains in an otherwise healthy infant, it would seem that there would be one set of skills and knowledge required.

However, senior or experienced osteopaths are cautious about whether inexperienced paediatric osteopaths have sufficient palpatory expertise to determine the level of tension and its clinical relevance from an osteopathic perspective. They might determine that there are no real biomechanical tensions, but might 'miss' something that later gives the infant real concern. One example of this might be a small but significant change in head rotation and neck mobility at the occipito-atlantoid junction, which, if left untreated could lead to head turn preference and therefore an increased risk of deformational plagiocephaly.

The fact that many inexperienced osteopaths struggle to get adequate exposure to babies in a training or supervised situation may mean that even if the role of the post-natal check is positive, then inexperienced osteopaths should not be doing it.

There is also the point that if the baby does not have symptoms, but there are actual clinical signs of emergent significant pathology or problems, inexperienced osteopaths may miss them. In such circumstances there is a risk of the parent being told there is nothing 'wrong', thereby delaying necessary care.

Again, this highlights the need for detailed clinical knowledge, and that clinical analytical skills need to be present beyond those required for a simple check of minor mechanical restriction and some myofascial tension here or there.

It was universally accepted in the project that it is very challenging for osteopaths to gain this type of training at undergraduate or pre-entry level training, or even at a post-professional level. Many osteopaths do not have separate or advanced training in these fields. The apparent lack of any reporting of actual or possible adverse events in infants by osteopathic treatment in New Zealand, or elsewhere, does not, in itself, imply competence.

## **When the baby does have symptoms**

Because of the potentially fragile state of infants, the clinical progression of pathology or problems in the very young can be very quick. Many infant health disorders can have highly significant adverse outcomes if appropriate and timely clinical care and onward referral are not provided. Accordingly, when an infant does have symptoms, if the possible adverse nature of these is not recognised, then the risk of the infant receiving inappropriate care is high.

The project highlighted that osteopaths are aware of high-risk issues and red-flag signs, such as failure to thrive, fever, adverse head shape and sensitivity to pressure on the head or suture lines, or poor or altered tone and responsiveness to stimulus. This indicates that some appropriate clinical reflection is occurring. There may also be some symptoms and problems that are less clinically high risk that osteopaths can play a positive role in, so osteopathic care in a symptomatic situation is not necessarily contra-indicated, and may be of benefit to patients and their families.

Within the scope of this report it is not possible to review all the relevant literature on clinical outcomes, clinical efficacy and adverse events reporting. This project focused on the fact that post-natal checks are done, and so it was important to review what this check should consist of and what skills and knowledge are required to perform it.

It is likely that there are several layers to the check, and that the roles being undertaken within that check are in fact multiple and need further teasing out, in order for an appropriate conclusion to be drawn about the necessary skills and knowledge.



## Conclusion

Osteopaths strongly believe that there is real clinical benefit for babies to be checked post-natally by an osteopath. The remaining question is, once the role is clarified, which osteopaths have the competence to perform it?

Because of the vulnerability of the very young, it would be prudent if some sort of urgent review process of clinical competence in this area were developed, as a priority over other areas of paediatric work in older children, which could be similarly reviewed but on a slightly different timescale as resources allow. This is not because these areas need not be so strongly reviewed, but the professional resources required to review clinical competence are not insignificant and priority must be brought to the debate.



## Appendix 1: Developing a set of osteopathic paediatric capabilities for practice: Timeline and data

From its inception in 2010 the project has had a variety of events and outcomes. These events are catalogued below and should provide an indication of how the project has developed over a period of time.

### Timeline of the project from inception

**March 2010:** The Paediatric Research Proposal was sent to the OCNZ. This proposal contained an overview and initial costs to the OCNZ to cover the support costs, including travel to conduct the interviews proposed in the project, and for the email survey and data collection for the proposed snapshot survey and workforce survey.

**April 2010:** A literature review was undertaken. This has been included in the 2011 Report to the Council.

**July 2010:** Interviews were conducted with key professionals in the field. These covered:

- Ten osteopaths who treat paediatric patients regarding paediatric practice – its standards, training, support and approach to patient care in New Zealand
- discussions with other health-care professionals regarding competence and training, and curriculum issues in New Zealand.

The data was collated in the 2011 Report to the Council.

**October 2010:** A snapshot survey of current paediatric practice in New Zealand was conducted, covering types of presentations engaged with, age range of patients presenting, and types of care given. This snapshot covered a two-month period from August to September, with a return survey date of 5 November 2010. Ethics approval for this data collection point was granted under the Faculty of Health Sciences Ethics Committee, University of Auckland, in September 2010.

**November 2010:** Data was collated into a research portfolio. This was submitted as a paper for the Master of Clinical Education qualification being undertaken by the author at the time.

**May 2011:** Data was collated into a report to the Council.

**August 2012:** An outline for a second phase of research into paediatric capabilities and practice was submitted to the Council. A summary/revision, based on the initial proposal, was delivered in May 2012: OCNZ Paediatric Capabilities and Vocational Scope of Practice Development Project.

**September 2012:** The SurveyMonkey instrument was developed and circulated to all registrants.

**November 2012:** A letter was sent to registrants, outlining the project for 2013 and inviting them to participate.

**December 2012:**

- A review of the SurveyMonkey data was carried out and preparation was made for the February 2013 Auckland workshop to develop a paediatric capabilities document.
- Liaison was undertaken with UNITEC to provide student analysis of the SurveyMonkey data in support of the project.



**January 2013:** The e-module course for the February workshop was created, and pre-reading was uploaded onto the Council's Huddle space. Nominated attendees for the meeting were invited to the Huddle space.

**February 2013:** A two-day workshop was held in Auckland, at which the capabilities document was revised to include an orientation to paediatrics. This was sent to the Council for checking with regard to substantive changes, gazetting requirements and consistency with other policy and relevant documents.

**March – April 2013:** Small-group work and data collection were carried out on common conditions and the knowledge areas required for analysis in the remainder of project, using wikis and more SurveyMonkey instruments.

**May 2013:** Registrants were invited (and asked for feedback on the project to date) to attend a series of smaller focus groups in either Christchurch, Wellington or Auckland, to further the data collection and analysis; and in particular to develop more in-depth analysis of what paediatric work does or should consist of.

**May – June 2013:** A request was made to the participants of the small-group work for case analysis templates and case presentation / patient case templates, based on the common conditions identified.

**June 2013:** Material was developed for the July workshops.

**July:** One-day workshops were held in Christchurch, Auckland and Wellington.

**August – September 2013:** Data was collated and ongoing analysis done for the remaining part of the project.

**September 2013:**

- An addition to the paediatrics project was agreed on due to the volume of data collected and the analysis required, and also due to an emergent need to pilot test items for a credentialing tool and to trial concepts of standard setting within the group to attend the planned October workshop.
- Invitations were sent out to participate in the October two-day weekend workshop in Auckland.

**October 2013:** The two-day workshop in Auckland covered mind maps, flow charts and standards of appropriate baseline clinical activities and capability. A pilot assessment was run using written test items (key features and extended matching). Also, an anghoff standard-setting exercise was carried out, and the participants continued to debate the nature of the necessary standards and education required for paediatric practice in New Zealand.

**November 2013 – April 2014:** Final project analysis and write-up were carried out.

**May 2014:** The data and final report were delivered to the Council, including recommendations and proposals for future work.

## **Raw data gathered and communications documents sent and received**

These were collated into a four-part 'Data and Communications folder'.

### **Part One**

**March 2010:** Paediatric research proposal.



**May 2011:** Report to Council: *Osteopathic Paediatric Capabilities and Practice in New Zealand* – full report in a separate folder. Plus, draft journal article for submission to suitable publication, or could be published under the D.O.I. Number system as an Osteopathic Council publication.

**May 2012:** Initial proposal delivered in May 2012 – OCNZ Paediatric Capabilities and Vocational Scope of Practice Development Project. This was a three-phase proposal lasting until the end of 2014.

**August 2012:** Revised outline for a second phase of research into paediatric capabilities and practice submitted to the Council, plus review of 2011 report and introduction to 2013 project for the Council.

**September 2012:** SurveyMonkey instrument – questions only: ‘Capabilities for Paediatric Osteopathy Practice – survey on behalf of the OCNZ’.

**November 2012:** Letter to registrants outlining project for 2013 and invitation to participate.

**December 2012:** SurveyMonkey data – all individual responses: see three separate folders. Responses are collated in a separate set of three binders: ‘Capabilities for Paediatric Osteopathy Practice – December 2012 survey on behalf of the OCNZ – Individual Responses Anonymised, Parts One, Two and Three’.

**8) December 2012:** Analysis of data by UNITEC Liaison.

### *Part Two*

**January 2013:** E-module course for February workshop created, and pre-reading uploaded onto the Council’s Huddle space. Nominated attendees for meeting invited to Huddle space.

### **February 2013:**

- Two-day workshop in Auckland – attendees and day one presentation / PowerPoint indicating tasks and orientation.
- Two-day workshop in Auckland – day two presentation / PowerPoint indicating tasks and orientation.
- Workshop summary of knowledge areas and depth of knowledge required – medical knowledge discussion.

**March – April 2013:** Summary of 2010 Snapshot survey of ‘conditions’ treated.

**March – April 2013:** Wiki data collection of lists of conditions or presentations seen, which should be included in further analysis through rest of project – including common conditions, less common conditions, and those not to be forgotten even if rare.

### *Part Three*

**March – April 2013:** SurveyMonkey collation of age group-related common condition lists, and lists of things not to be forgotten: for under ones, for those under five and over one, and for those over five years, plus indications of aims per top five of each section, for general osteopaths versus experts – summary data.

### **May 2013:**

- SurveyMonkey: prioritising top 10 lists for all three age groups for common conditions – raw data.
- SurveyMonkey: Clinical engagement – aims of treatment for very common conditions for all three age groups – for ‘general osteopaths’ or ‘experts’ – raw data.



- SurveyMonkey: prioritising top 10 lists for all three age groups for not-to-be-forgotten conditions – raw data.
- SurveyMonkey: Clinical engagement – aims of treatment for not-to-be-forgotten conditions for all three age groups – for ‘general osteopaths’ or ‘experts’ – raw data.

#### **Part Four**

**May 2013:** Invitation to registrants (including feedback on project to date) to attend series of smaller focus groups in July in Christchurch, Wellington or Auckland.

#### **June 2013:**

- Case analysis templates and case presentation / patient case templates based around common conditions identified – blanks.
- PowerPoint as preparation for July workshops.

**July 2013:** Workshops attendees.

**September 2013:** Invitation to October workshop weekend in Auckland.

#### **October 2013:**

- Agenda for weekend, list of attendees (unsigned) and picture that was tweeted showing workshopping in progress!
- Blank key features test items for piloting in October workshop.
- Blank extended matching questions test items for piloting in October workshop.
- DOPS / OSCE timetable, mark sheet and crib sheets for markers.
- Project 2013 costings and invoices.

#### ***Raw data responses for the ‘Capabilities for Paediatric Osteopathy Practice – September 2012 survey on behalf of the OCNZ’***

Please note: these are collated in a separate set of three binders: ‘Individual Capabilities Survey Responses - Anonymised, September 2012 – Parts One, Two and Three’.

#### ***Standards of care case templates for the common conditions and not-to-be-forgotten lists: raw data, including annotations made during workshops***

For those under one:

- 1) Standards of care – list of capabilities items to focus on in the case templates, plus the responses for ‘colic’ and ‘constipation’
- 2) Suck and latch
- 3) Birth trauma
- 4) Plagiocephaly and altered head shape
- 5) Congenital hip dysplasia
- 6) Torticollis
- 7) Shoulder dystocia / brachial plexus injury
- 8) Meningitis
- 9) Reflux.

For those over one and under five:

- 10) Neck pain



- 11) Otitis media / EENT
- 12) Minor mechanical trauma
- 13) Headaches
- 14) Asthma
- 15) Perthe's
- 16) Dyspraxia
- 17) Juvenile RA
- 18) Sleep disturbances
- 19) Abnormal gait
- 20) Osteomyelitis.

For those over five years:

- 21) Growing pains
- 22) Osgood Schlatters
- 23) Sever's disease
- 24) Chondromalacia patellae
- 25) Post-fracture rehabilitation
- 26) Adolescent scoliosis
- 27) Spondylolysthesis
- 28) Slipped upper femoral epiphysis
- 29) Learning delay / autism spectrum
- 30) Glandular fever
- 31) Headache.

#### ***July workshops data folder: recap, and post-natal check data***

- A) Osteopathic principles recap, osteopathy as first or second port of call? Clinical complexity diagram, other comments.
- B) Start of mind mapping for common conditions and those not to forget.
- C) Post-natal baby check, exams to do and osteopathic concepts – first attempt.
- D) Osteopathic concepts in a baby check – first summary (and votes).
- E) Osteopathic examination points in a baby check – first summary (and votes).
- F) Summary sheet / mind map of baby check and examination.
- G) Notes on paediatric case history components.
- H) Second workshop version of concepts in baby check and examination points.

#### ***Case presentations data folder***

Part one:

Under ones case data.

Part Two:

Over one and under-fives case data.

Part Three:



Over five case data.

*Mind maps / clinical process maps for the common conditions and those not to be forgotten: July workshops' raw data – conditions mapped folder*

Conditions mapped – part one:

- 1) Second iteration feedback and votes on need for revision of templates / maps initially drafted
- 2) Under one year conditions:
  - a) 'Colic' (note that this was eventually split into subsets including:
    - (1) sleep,
    - (2) excessive crying,
    - (3) suck and latch / poor feeding,
    - (4) reflux,
    - (5) constipation
  - b) Suck and latch – eventually given a full category on its own
  - c) Birth trauma
  - d) Plagiocephaly
  - e) Hip dysplasia
  - f) Torticollis
  - g) Congenital scoliosis
  - h) Shoulder dystocia / brachial plexus
  - i) Respiratory distress
  - j) Meningitis

Conditions mapped – part two:

Under five and over one year

- 1) (Neck pain) – was one to be mapped but time ran out
- 2) EENT
  - a) otitis media / glue ear
- 3) Minor mechanical trauma
- 4) Asthma
- 5) Juvenile scoliosis
- 6) Perthe's
- 7) Dyspraxia
- 8) Non-accidental injury
- 9) Juvenile RA

Conditions mapped – part three:

Over five years

- 1) Growing pains
- 2) Osgood Schlatters
- 3) Sever's
- 4) Patello-femoral syndrome / chondromalacia patellae
- 5) Post-fracture rehab
- 6) Adolescent scoliosis
- 7) Spondylolysis
- 8) Slipped capital femoral epiphysis
- 9) Learning or developmental delay / autism spectrum
- 10) Glandular fever
- 11) Gait problems



### ***Final round robin: review of maps – raw data folder***

Containing final (third) summary of feedback at end of last day of the July workshop series on the final iteration of maps and data worked on during the July workshops.

### ***Written test items and DOPS / OSCE results: Collated Data folder***

- 1) Individual candidates' extended matching items – results summary and anghoff
- 2) Individual candidates' key features items – results summary and anghoff
- 3) Excel analysis of key features marks
- 4) Excel analysis of extended matching marks
- 5) Standard deviation of marks plus brief overview summary of extended matching and key features papers
- 6) Amended OSCE timetable and results for primitive reflexes station
- 7) OSCE results for abdominal / cardio-respiratory station
- 8) OSCE results for head station
- 9) OSCE results for global spine and hips station
- 10) Edited extended matching paper
- 11) Edited key features paper
- 12) Comments on exam questions – feedback for future item writing

## **Publications**

### ***1) Report in May 2011 to Council***

*Osteopathic Paediatric Capabilities and Practice in New Zealand.* <sup>44</sup>

### ***2) A snapshot survey of current paediatric practice in New Zealand – types of presentations engaged with, age range of patients presenting, types of care given***

- See above report and items three and four in Part One of the Data and Communications folder.

### ***3) Revised Capabilities for Osteopathic Practice document to ensure it captures paediatric appropriate clinical actions and analysis***

This has been gazetted and is Council policy. All registrants must practise in relation to this policy. Key points: small changes were developed through utilising suggestions from the 2011 paediatric osteopathy snapshot survey and interviews, followed by a profession-wide survey of registrants at the end of 2012, followed by a workshop in February 2013.

### ***4) This report, dated July 2015.***

## **Data sets**

### ***1) A profession-wide survey of issues relevant to the capabilities for osteopathic practice in the paediatric field.***

A SurveyMonkey instrument was developed and emailed to all registrants. Sixty-nine replies were eventually received, of which 55 were part analysed by collaborative arrangement with UNITEC. The key points were as follows.

- Osteopaths view communication and handling skills as paramount

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<sup>44</sup> See separate binder.



- Practical training is essential, but everyone acknowledges that there are issues with provision that makes this difficult to achieve.
- Osteopaths are already conversant with the necessary case analysis steps (e.g. case history taking, need to screen, development of working hypotheses and need for ongoing case review).
  - Theoretically there is a strong argument that osteopaths do not need further training in these basic case analysis processes, but may require updating in the underlying KSAs for any given paediatric condition so that there is an awareness of the analytical approaches that are relevant in any given situation, and the knowledge of the range of issues to be screened and explored is sufficiently updated and relevant to the presenting situation.
  - However, the communication skills for paediatric patients, and interviewing through a third party (e.g. parent) may need upskilling or introducing.
- Medical differential diagnosis requires updating across the board.
  - Current training is insufficiently uniform to be reliable.
- There is very diverse opinion on how ongoing assessment and credentialing for osteopaths in paediatric practice should be developed.
  - The most likely acceptable model will be one with self-evaluation, using some educational and updating opportunities either extant or developed, and a peer review / mentoring approach to deliver practitioner support.

## 2) Knowledge areas

A range of continuing professional development tools or curricula could be guided by the key knowledge / skill areas identified

### Key areas

- Common curriculum / blue printing areas for the under ones are infant health and perinatology, unsettledness and crying infants, plagiocephaly and torticollis issues, growth and development in infants, and family health dynamics.
- Common curriculum issues for preschool-age children include developmental progression awareness, health screening issues, infection and immunisation issues, learning delay, upper respiratory issues including otitis media with or without infusion, trauma and injury in pre-schoolers, family and community health dynamics and issues, and general pathology.
- Common curriculum issues for school-age children and youths are orthopaedics and skeletal developmental issues, idiopathic or congenital conditions with longer-term function implications (e.g. scoliosis), general pathology, and health screening issues for older children and young adults.

## 3) Case studies and case analysis templates

- A series of case studies / case templates now exist as examples of practice in common conditions for various age groups
- These can be further developed into:
  - case pathways as guidance for reasonable clinical approach to help determine the osteopath role, need for referral and basic management principles; they can be based on or related to the Canterbury Health Initiative HealthPathways data
  - case studies for reflective pieces in educational modules and/or as a useful 'model answer' for use in portfolio discussion items, case reflection exercises, clinical review situations and credentialing exercises.



- This data set contains elements that may require some small further work to gain consensus on 'model' answers or general performance indicators of required standards across a broad enough range.

#### **4) Written and practical (standardised patient) test items**

(Assessment) including key features and extended matching questions papers, and objective structural clinical examination (OSCE) format assessment.

Performed on sample of paediatric osteopathic population with varying skill sets and experience who attended the October 2013 workshop in Auckland.

The written test items were developed and put through a modified anghoff standard-setting process. Cut-off scores were identified, and the items were piloted with the results scrutinised.

#### **Key points**

- Written test assessment items, such as key features and extended matching, can be easily developed using the draft flow charts and case studies as blueprinting data. They can then be subjected to standard-setting processes such as anghoff, and be used to negotiate appropriate levels of baseline standards for use within the general scope.
- The pilot test items revealed a diversity of knowledge, but of a standard that could easily be redressed through self-learning approaches and CPD<sup>45</sup>, based on the learning needs analysis apparent as a result of the 'outcome' of the written test.
- The written test could ideally be used as a learning tool, and to foster debate and knowledge sharing.

#### **5) Flow charts and case pathways**

Plan for further development of these based on draft flow charts already developed in the workshops.

- A series of flow charts for reasonable baseline clinical case approaches and required underlying KSAs for a variety of common conditions in paediatric age groups were developed.
- Some possible case pathways have been fleshed out.
- Note: the term 'case pathway' may not be the most suitable. It is not the same as other forms of case pathway, but for want of a better term at this stage it should suffice.

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<sup>45</sup> Continuing Professional Development



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Figure 1: Clinical complexity and patient timeline: indicators for knowledge depth

Minimum A/S/A ∞

- Clinical complexity
- Professional Knowledge base
- Time line/ natural History of Complaint
- Role of the Osteopath : Rest of the Health Care Team

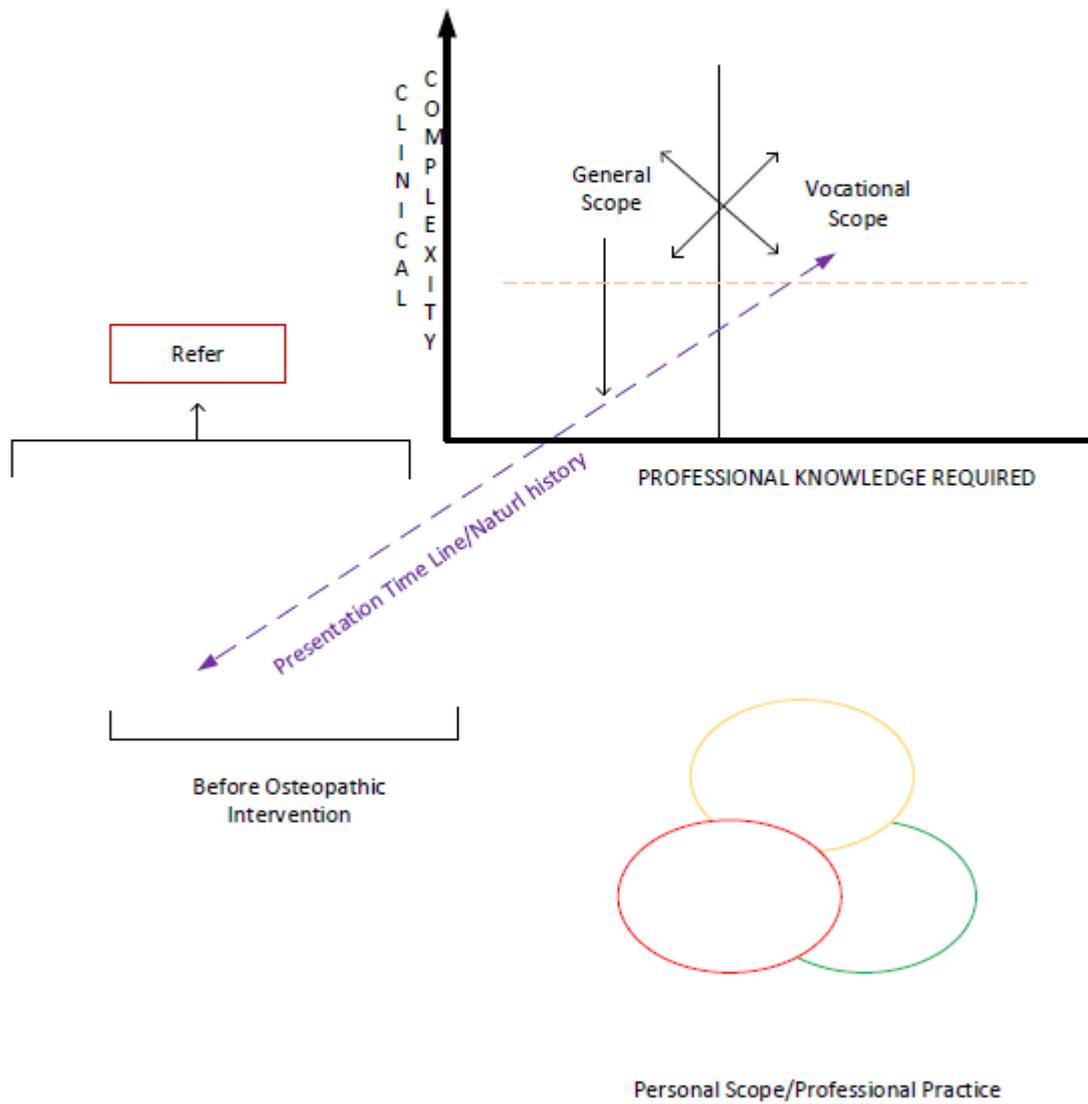


Figure 2: Typical sheets developed in the first July workshop

## SCFE

Vascular – Femoral Artery is involved  
Bone – Lower ROM pain  
Fascia – Tone Changes  
Lymph – Nodes/Check  
Nerve – Pain( not always in the early stages)  
Other – Gait, Pain, Limp

CAUSE: Trauma – Weight- Endocrine

AGE: 12 – 16 month / 10 to 14 F/ 2.5:1 F

AGGREVATOR: Weight bearing – Sports – Activity

REL.: Rest

Osteo: Referral – Investigate- Inquiry  
OMT Pelvic

TX Path: Yes

Outcome: Pre-surgery would be to reduce further slippage  
Post Surgery would be to reduce healing time, increase recover, GAIT,  
HP ROM normalization

Contradictions: No

OTHER  
Diet  
Mobility  
Surgery



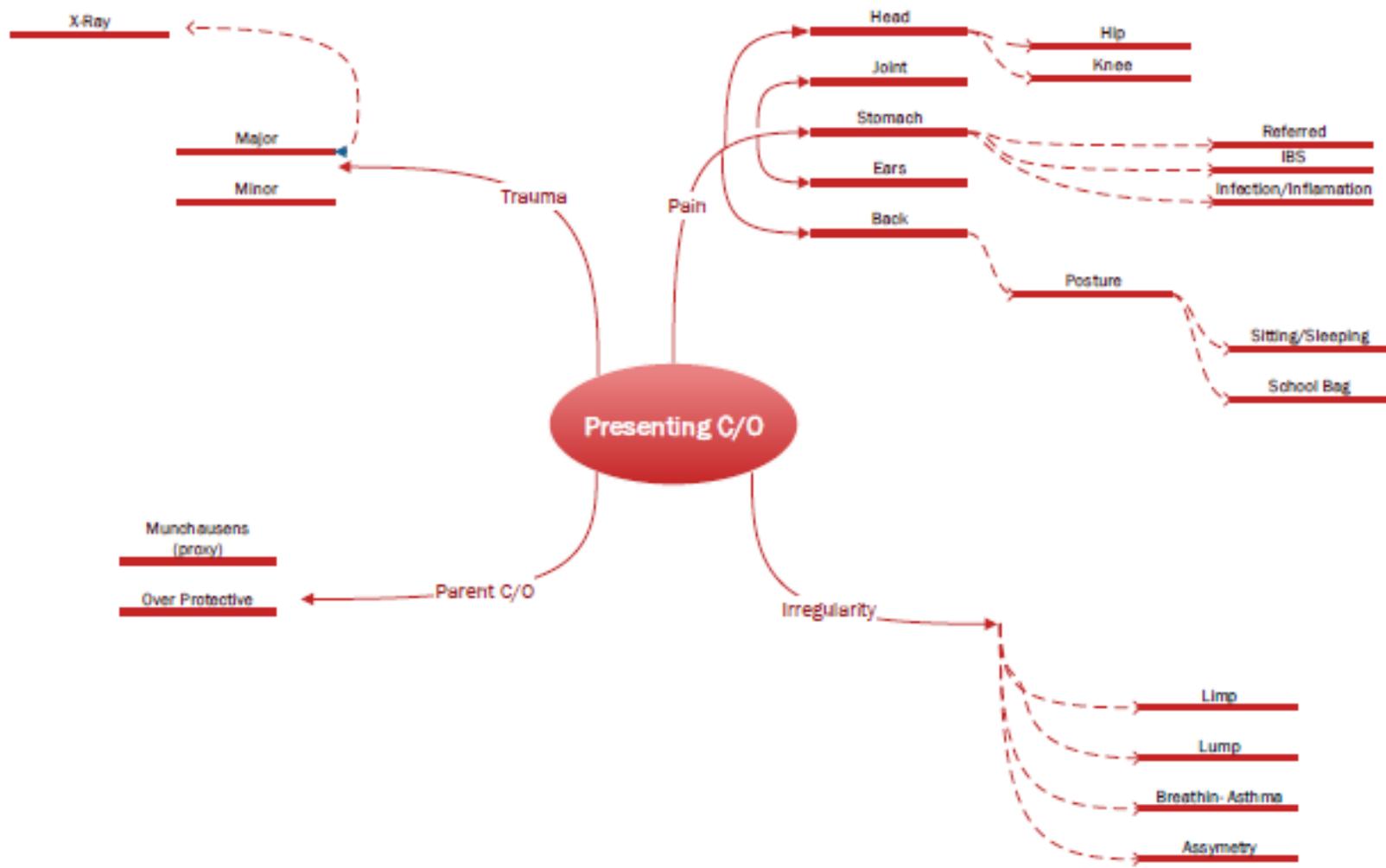


Figure 3: Glue ear pathway

Flowchart  
Osteopathic Management of Glue Ear – OME

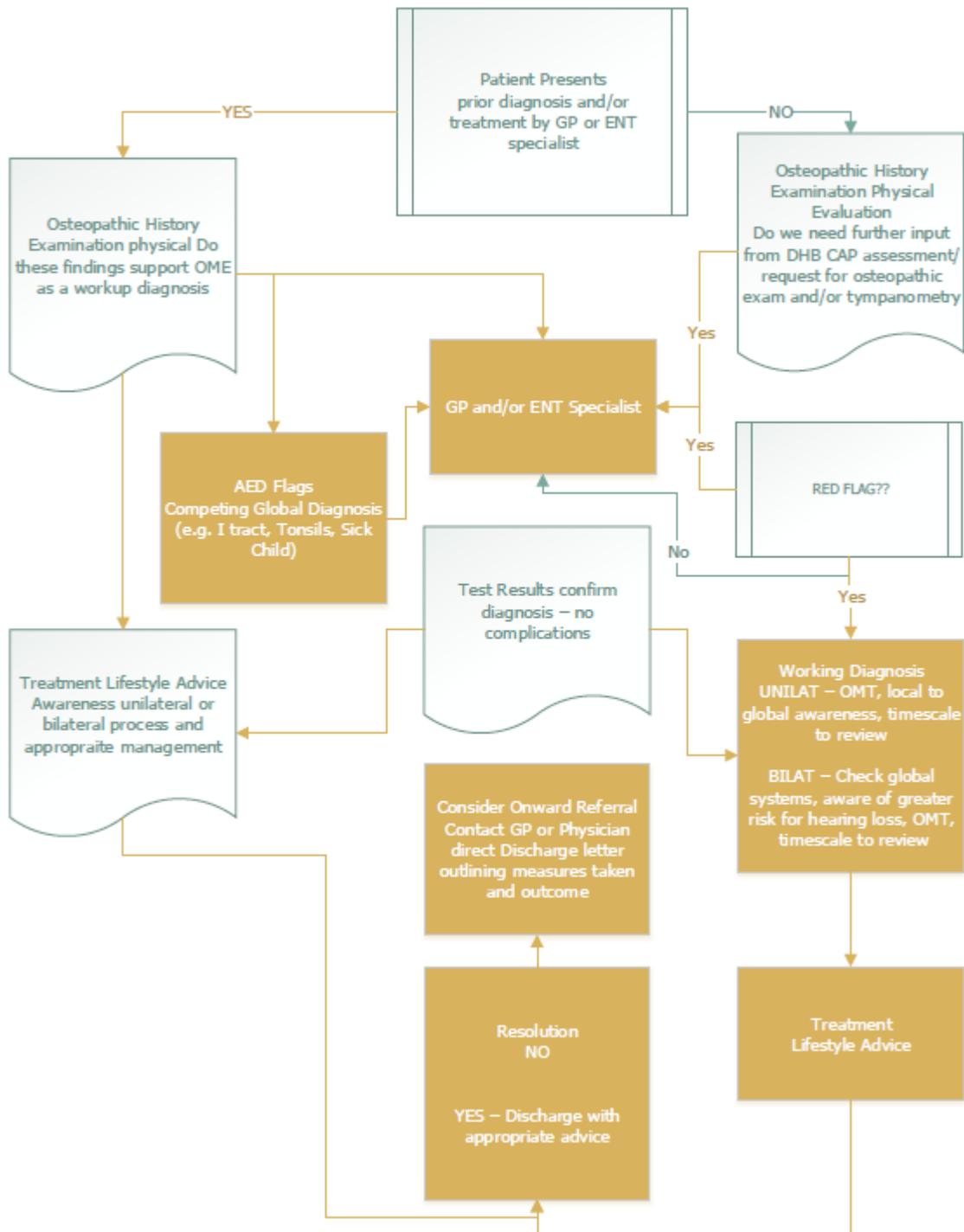


Figure 4: Colic pathway

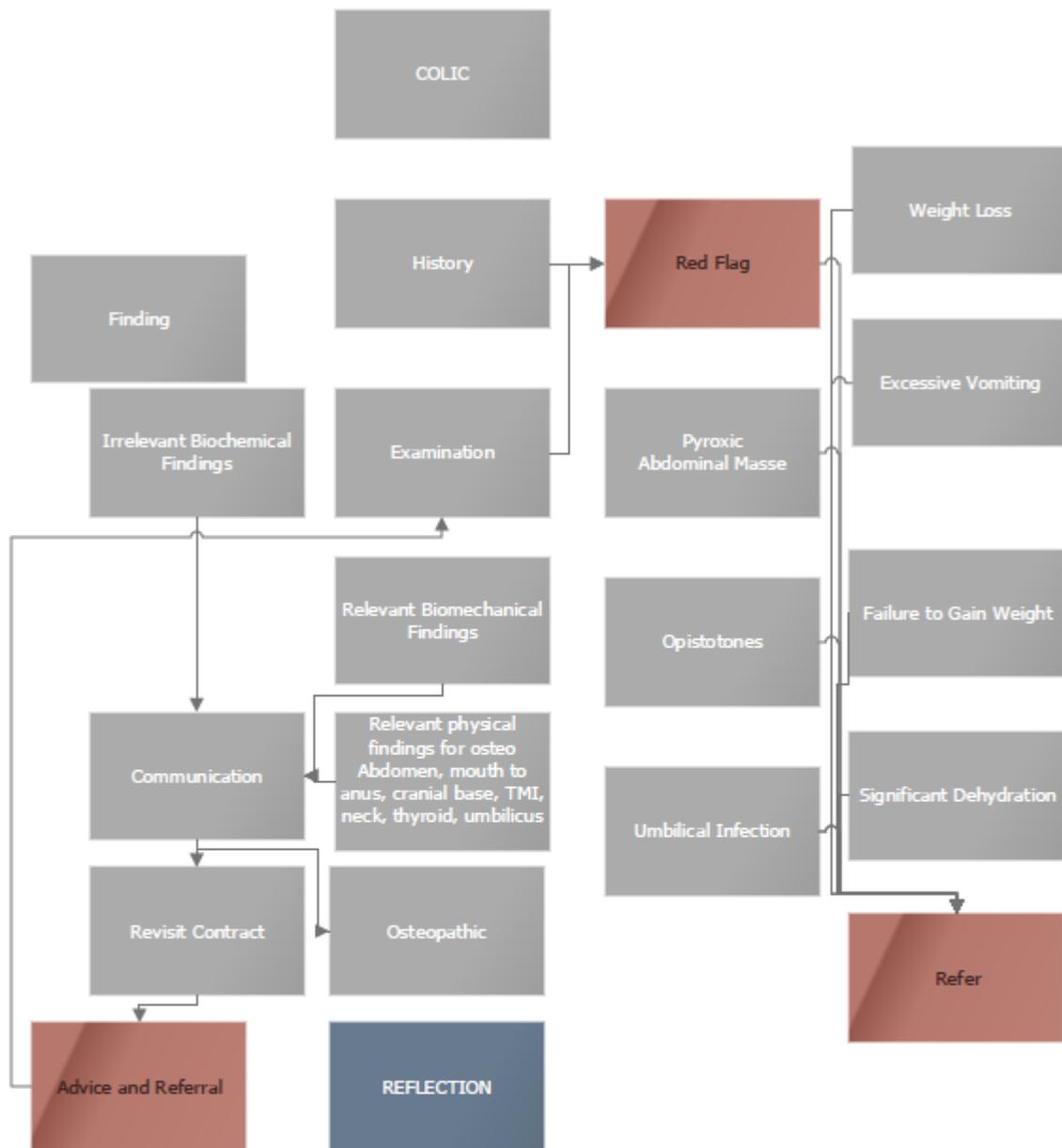


Figure 5: Torticollis pathway

