Labour Epidurals: The New and Old and the Myths

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Labour epidural, long thought of as the gold standard of labour analgesia, was first used in 1942. Much has evolved since then. Today, apart from conventional plain epidural analgesia, many anaesthetists offer combine spinal epidural (CSE). And in addition to continuous epidural infusion, we have patient-controlled epidural analgesia (PCEA) and computer-integrated patient-controlled epidural analgesia (CI-PCEA).

Each year in KKH, approximately 40-45% of our patients opt for epidural pain relief during labour. This translates to an annual number of more than 5000.

The use of high concentration (0.2-0.25%) of local anaesthetic in the past to maintain labour analgesia has been superseded by the use of low concentration (0.0625-0.125%) of either bupivacaine or ropivacaine. Ropivacaine is a new local anaesthetic that has preferential sensory blockade and less motor blockade compared to bupivacaine. Combined with low doses of opioid (such as fentanyl), the same level of analgesia is achieved while the incidence of side-effects such as maternal hypotension and motor blockade are reduced. At the same time, the incidence of instrumental deliveries is also decreased.1

Apart from conventional epidural analgesia, CSE is fast becoming a popular technique for treating labour pain. One of the disadvantages of plain labour epidural analgesia is the long onset for pain relief to occur (up to 20 minutes). CSE provides the advantage of a fast onset of pain relief (often within 5 minutes) by allowing the anaesthetist to give an intrathecal component followed by extending the analgesia with the epidural component.

In 1997, KKH became the first hospital in Singapore to adopt the CSE technique for labour pain relief. Today, CSE accounts for more than 80% of our labour epidurals.2 Anaesthetists are more inclined to use CSE than plain labour epidural for multiparous parturients, and in a more painful or advanced stage of labour. The need for supplemental analgesics is lesser and patient satisfaction higher for CSE compared to the latter. There are also reduced local anaesthetic requirements and less motor block. When compared with plain epidural analgesia, CSE does not appear to result in any difference in duration of labour and mode of delivery. The potential hazards of intrathecal catheter migration with a needle-through needle CSE technique and increase in post-dural puncture headache have not been demonstrated.2

Patient-controlled epidural analgesia for labour (PCEA) was first introduced into clinical practice by Gambling et al in 1988.3 In 1999, KKH became the first hospital in Singapore to offer it to labouring parturients. In a review of 18 randomized trials, which used PCEA in labour analgesia, PCEA has been shown to offer several advantages over both intermittent nurse-administered dosing and continuous infusion techniques. These include reduced local anaesthetic used, less motor blockade, lower pain scores, improved maternal satisfaction and less anaesthetic interventions with possible decrease in staff workload.4-6

Computer-integrated PCEA (CI-PCEA) is a novel epidural solution delivery system that has been developed and introduced in KKH in the last 2 years. In CI-PCEA, a laptop computer with a programmed algorithm is connected to a standard epidural pump. The computer program automatically adjusts the background infusion rate based on the number of patient’s PCEA demands in the previous hour. The algorithm adjusts the background infusion to 5, 10 or 15ml/h if the patient required one, two, or three demand boluses,
respectively, in the previous hour. If there are no bolus demands in the previous hour, the background infusion is cut by 5ml/h. Our studies showed that CI-PCEA group had similar local anaesthetic consumption compared with demand-only PCEA but was associated with increased maternal satisfaction. We also found that CI-PCEA reduced the incidence of breakthrough pain without increasing drug consumption when compared with continuous epidural infusion without PCEA for labour analgesia.\(^7\,\,8\)

Despite being the most efficacious of all labour analgesia nowadays, many women still choose not to have epidural during labour due to the many “myths” surrounding it. We attempt to debunk the more common ones here:

1) Epidural increases the chance of having a cesarean section.

In the late 1980s and early 1990s, several retrospective trials demonstrated an association between the use of epidural and increased caesarean rate.\(^9\) However a criticism of these trials was that the women selected for the epidural already represented a population with an increased risk of an unfavourable course of labour such as those with cephalopelvic disproportion or fetal malposition, both of which increased the risk of caesarean section. Recent meta-analyses by Leighton et al and Liu et al found no direct relationship between labour epidural and caesarean section.\(^10\,\,11\)

2) Epidural prolongs labour and increases chance of instrumental vaginal delivery.

Early studies have suggested that labour epidural prolongs labour and leads to increase in risk of assisted vaginal delivery.\(^12\,\,13\) Later studies, however, showed a decrease in assisted births despite an increase in number of women asking for labour epidural.\(^14\) This change in incidence of assisted deliveries can be attributed to improved epidural techniques and change in obstetric practice over the years. More obstetricians now recognise the adverse maternal outcomes associated with forceps and vacuum births while anaesthetists have moved towards using dilute local anaesthetic epidural solution to decrease the motor block.

3) Epidural leads to post-partum chronic backache.

Mechanical and structural changes in the spine as a result of normal physiological changes of pregnancy often lead to back pain after pregnancy.\(^15\) Studies have also shown the incidence of antenatal backache to be as high as 76-80%.\(^16\,\,17\) Those who experienced back pain during pregnancy are more likely to have back pain after they have delivered.\(^18\) Other factors include high BMI, hypermobility of joints and young age.\(^19\) It is normal and anticipated to have a tender area and small bruise over the location of epidural injection up to a few days after delivery. This has led to one of the biggest myths about epidural analgesia that it is to be blamed for the development of chronic back pain post delivery. As a matter of fact, opting for epidural analgesia does not position the mothers at higher risk for long term back pain compared to those without.\(^20\,\,21\)

References
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The Reinvention of Internal Medicine
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All in a Day’s Work
An elderly man refuses to eat and eventually cannot walk.

Another patient has spiking fever; all cultures are negative and there is no response to antibiotics.

A 59 year old homemaker has stiffness on lifting her marketing basket. Muscle enzymes are normal; power is full.

A young lady has severe intractable diarrhea despite seeing gastroenterologists.

Question: What do these patients share in common?
Answer: 1. Their presentations were unspecific
2. Their diagnoses were uncertain
3. They saw many different doctors
4. They were finally attended to by internal medicine physicians

In case one, we found bilateral subdural haematomas. Surgical opinion was that patient was high risk, had a poor quality of life and would not benefit from evacuating the chronic lesions. However, systematic risk assessment and perioperative medical management by our physicians enabled both surgeon and family to proceed with the operative approach. Patient regained alertness, ate and walked again.

Case two was diagnosed with Adult Still’s disease.

Case three? Polymyalgia rheumatica.

And case four? Uncontrolled thyrotoxicosis and not gastroenteritis.

Patients such as these belong to the X-files of the Department of Internal Medicine, or rather, cases solved. While highly focused subspecialist practitioners contribute by excluding diagnoses related to specific fields (“I don’t know what you have but it’s not from your heart”) and offer latest therapies to defined disease entities, (eg helicobacter pylori, hepatitis B), the above types of cases require slant of mind and approach which is recently being resurrected, namely, the skills of a general physician or internist.

From bizarre diagnoses like mercury poisoning, to rare viruses and bacteria to autoimmune disease, malignancies, stress reactions, from stone fish envenomisation to deconditioning to common garden pathologies, a wide variety of culprits are uncovered that try to lay claims on human health…

This is because our starting point is not a few specialised diagnoses or solutions. Rather, our forte is systematic assessment and tailoring therapy to the situation, with targeted referral to appropriate colleagues if required after a firm diagnosis is made.

How Internal Medicine Got Reinvented and What’s Different Now
Up to a decade and a half ago, there existed strong general medical departments powered by astute and experienced master clinicians up-to-date and confident with managing all organ-systems and pathologies.

However, the push to subspecialisation led to the redundancy and near extinction of this breed.

Patients too, have been instrumental in the creation of the demand of this type of practice, in the pattern they consumed health care services, continually seeking out the highest level specialist for each and every symptom.
However, the total patient experience in many cases has on the contrary become compromised because:

1. Many patients have non-specific and atypical presentations. When their condition cannot immediately be classified, it becomes a mystery where their port of call should first be. These diagnostic dilemmas often do a tour of duty in multiple subspecialty clinics who exclude what they do not have but would not be designed to pinpoint what they actually do have. Non-recognition and blindness of things outside the specialty is a very real problem indeed, as “the knowing eye sees”.

2. Post diagnosis, many patients ended up seeing half a dozen doctors – one for each problem, quite exhausting and often counterproductive for typically elderly subjects who may be confused by conflicting inputs from different specialties. It became quite clear that the bulk of patients serviced do not actually need cutting edge care but good comprehensive holistic management of the total person by a single skilled physician.

Patients too, have realised that they could no longer keep up making a tour of duty with many pit-stops at various high level specialties designed for the best care. Hence, a reverse trend is now observed where many patients prefer one skilled practitioner to handle most of their medical issues in a professional and cost-effectively way in a “single stop”.

Therefore, even as she was disbanded some 15 years ago, her relevance was realised… Internal medicine is now a standalone subspecialty undertaken at advanced level with its own training programme stressing on diagnostic, screening and integrative medicine, alongside other subspecialties such as cardiology, nephrology etc.

Definition and Relevance of Internal Medicine Reinvented

Internal medicine has become an accredited standalone field with its own subspecialty training programme leading to separate accreditation. But what is exactly is internal medicine, and how is its practice defined, given the comprehensive selection of subspecialties available? How does a generalist physician position himself and remain relevant in a sea of extremely qualified subspecialists? These are some burning questions often facing a young resident deciding on his future career path as an internist.

Defined in a nutshell, Internal Medicine involves the practice of diagnostic, integrative, coordinative and holistic medicine within a hospital setting. Rather than a disease or organ-defined specialty, it is essentially a Methodology and a Philosophy that is based on the desire to offer holistic comprehensive knowledge and care.

Today’s internist, though practicing in a hospital, also endeavours to solve and manage most patients in an ambulatory, outpatient, but tertiary hospital setting, hence the practice is somewhat differentiated from the heavy inpatient focus of yesterday’s internist or the primary care physician practicing and maintaining health in the community.

As for relevance, the need is huge for good internists, especially with the burgeoning elderly multipathology patients filling up
hospitals. These patients often do not need cutting edge technomedicine, but thrive and improve on an astute medical analysis coupled with a holistic approach to their problems and needs.

Hence, almost as soon as the general medicine units were disbanded at Singapore General Hospital (SGH), a new department was set up due to sheer need, as it was found that about 30% of patients could not be easily classified. Currently, among medical inpatients currently in SGH, about 30% are managed by the Internal Medicine and the other 70% by 12 subspecialties.

New Internal Medicine Specialty Training Programme and Practice

What constitutes the training and practice of Internal Medicine?

Firstly, Internal Medicine training involves Diagnostic Method. The skills of the general internist do not revolve around a particular organ, diagnostic group or procedure, but the age old skills of careful and comprehensive history taking, spending bedside airtime listening carefully to the patient (since there are no procedures we do, this is our "procedure") and multisystem physical examination, coupled with in-depth knowledge of state-of-the-art diagnostic tools.

Secondly, training and practice involves the strenuous responsibility of keeping abreast of latest developments and drugs across all fields, so that we may not only recognise diseases but orchestrate and harness the skills and services of our subspecialty colleagues in the most efficient way. While impossible to know everything in all fields, today’s general internist must keep abreast to sufficient detail. An internal medicine advanced trainee is required to do registrar postings in multiple subspecialty areas before exiting as a qualified internist.

Thirdly, Internal Medicine today is heavily committed to integrative care, and the practitioner must be able to collate different pathologies and manage patients as a whole without fragmentation of care. This is especially true of the elderly patients.

Fourthly, an internist typically does have an area of special interest to research in and develop further, either in an established specialty or a niche area not covered by the mainstream specialties. Some internists would prefer double accreditation eg rheumatology, geriatrics, gastroenterology, while others may choose to focus on a specific clinical or paraclinical service eg clinical nutrition, bone health, hypertension, medical ethics etc.

A specific area to mention dealt with by our internists is hypertension. Difficult and uncontrolled hypertension generally gets referred to our department for investigation by primary care doctors across the island, since secondary causes span a variety of diagnostic possibilities from vascular, renal to endocrine pathologies, familiar to our broad based practice. End organ damage at multiple sites are looked for by us, and control of the difficult hypertensive by multiple drugs involve knowledge of physiology and current medical guidelines which our trainees are obliged to know.

Integrative Medicine and Medical Maintenance

Today’s patient, often elderly with comorbidities, faces another challenge after the stress of the diagnostic stage... that of continued medical maintenance. Many have issues in several organ systems and many end up seeing multiple subspecialists who may not get a chance to communicate with each other in space and time. Especially for common generic ailments like chronic heart, renal and metabolic conditions, one port of call may actually improve outcome, coordination and reduce cost. Many patients have problems in multiple organ systems and would prefer consolidated care by one clinic and one internist with an overview, rather than the exhausting and costly practice of regularly seeing 5 or 6 practitioners. The internist would be able to at any point harness the expertise of his colleagues effectively should an additional opinion or procedure be required, overall giving more cost effectiveness, better patient experience and outcome.

Under an internist care, they would however still be required to see highly focused subspecialists
for interval follow up of specific issues, albeit less frequently eg cancer follow-up, diabetic retinopathy, post angioplasty review.

Our integrative services is heavily subscribed in the area of total diabetic management which involves not just endocrinological blood sugar control, but macro/microvascular surveillance, medical management of coronary, cerebrovascular and peripheral vascular disease, diabetic bladder disease, coronary co-morbidities such as hypertension and hyperlipidaemia, renoprotection, eye care, mobility etc. This is similar to demands made to the primary care physician given Singapore’s huge diabetic burden. Cases seen by our department are typically those with poor control, severe metabolic derangements and established end organ damage often requiring procedures.

Another clinical area constituting a big part of our practice is the care of the elderly patients with many comorbidities such as prostate issues, osteoporosis, IHD, cardiac failure, hyperlipidaemia, hypertension, diabetes etc. This area of our medical maintenance work overlaps and is often identical to that of a geriatrician. Generally those with more acute issues get channelled to our department as the port of first call.

Which Patients Don’t Need Us
1. Stable patients with clear plans are best managed by a good primary care physician. For this group, their integrative care and maintenance are most effective when they are close at hand, accessible and barrier free, ie within the community and not within a hospital setting.

Upon diagnosis and stabilisation, we actively discourage such patients from making the hospital take over their primary care, as waiting for appointment day, transportation challenges for the mobility-impaired, higher cost, can all result in a poorer outcome and assessment delays.

2. Where there is a clear indication for subspecialty intervention eg typical angina, epilepsy. In these patients, an interim assessment by us will be redundant and add to cost and delay.

In any case we are just a call away if discussion is needed for a suitable manner to triage and direct these patients.

Which Patients to Refer?
If a patient presentation does not lend itself to an obvious diagnosis and where management plans involve multiple systems, a complete assessment by one of our internists might be considered. While it is true that we do not turn away any patient and virtually all groups of patients can be handled by us at least in their initial stages, the following are some guidelines that delineate the boundaries of the work that we do:

Which Patient Will Benefit from Internal Medicine Consultation
1. Diagnostic dilemmas and unclear presentations.
2. Patients with multiple pathologies who need integration of care.
3. Patients who need coordination of referrals where many services are required.

Subspecialty skills are often more effectively optimised when cases are prefocussed, predigested and prediagnosed. Working within the hospital community, we are better positioned to forward-refer, orchestrate and match the services skills of subspecialty colleagues to patient needs, where it is unclear whom patients need to be referred to.

In Conclusion
There have been standard jokes like the generalist being Jack of all trades master of none, while the subspecialist knows more and more about less and less till at last he is someone who knows everything about nothing.

However, patients in reality need both these species, and there exists a healthy relationship and symbiosis between these two breeds of clinicians, just as doctors by nature and personality are often cut out to be either broad-based or finely-focused in their orientation.

With our Diagnostic and Integrative Method established as a subspecialty unto itself, other organ subspecialists can be freed up to focus on specific disease entities, and our patients can only benefit from players with different approaches and different strokes to vanquish disease and promote health.
Physicians are faced with a number of challenges in the current medical environment. These challenges include an ageing population - many with multiple comorbidities - rapid advances in technology, increased costs to provide these services, and the need for a working environment that can allow for the adaptation of this process. The cardiovascular surgeon has not been immune to these challenges.

There has been a rapid evolution in the treatment of cardiovascular disease, mostly due to the advancements in transcatheter technologies. These include transcatheter heart valve therapies, stent-graft treatment of aortic aneurysms and other endovascular interventions. This has also resulted in the integration of open surgical procedures with transcatheter interventions. These minimally invasive or hybrid procedures have resulted in markedly decreased morbidity and mortality for elderly or polymorbid patients who would otherwise be exposed to major operative complications.

The evolution in the treatment of cardiovascular disease imposes a strain on our current operating theatre environment – it was not designed for modern day cardiovascular surgery. To improve the quality of cardiovascular care, the cardiovascular surgeon has to develop an operating room that more readily integrates the latest imaging and procedural technology – the Hybrid Operating Theatre (OT). The Hybrid OT is also the ideal facility for increasingly complex procedures performed by the interventional cardiologist, particularly in the field of structural heart disease, and current cardiovascular catheterisation laboratories do not have the back up support afforded by the Hybrid OT.

Imaging devices have been used in operating rooms for a long time. Mobile C-arms, ultrasound and endoscopy are basic prerequisites for operations in many surgical fields. However, the Hybrid OT needs, in addition to standard surgical specifications, high-quality imaging equipment equivalent to angiographic systems used in interventional radiology and cardiology.

These include high-end fluoroscopy, 3D angiography, CT-like imaging and intravascular ultrasound, which allow the visualisation of thin guidewires, quantification of small vessel diameters, and evaluation of delicate anastomoses. Also, the facility for seamless archiving of images and post-processing capabilities are important for the imaging workflow.

In addition, the Hybrid OT should also possess all the essential equipment available in a state-of-the-art cardiovascular operating theatre: laminar airflow with frequent air exchanges, large flat panel displays for hemodynamic monitoring as well as real-time and stored fluoroscopic images, and gas and electric pendants for anaesthesiology and perfusion.

The new Hybrid OT at the National Heart Centre Singapore incorporates a robotic state-of-the-art imaging system, which combines all the abovementioned requirements of surgery, anaesthesiology and invasive cardiology to provide excellent imaging quality. The system has a virtually limitless positioning ratio, performs real-time 3D image reconstruction and has added functional space for collaboration among physicians and surgeons from multiple disciplines.

The on-site presence of advanced imaging is a way to ensure the precision and optimal safety of many surgical procedures. The high-end imaging systems available provide quick and detailed information for shorter, more
accurate treatment with substantially less X-ray exposure when compared to traditional devices. Complex cases are more easily treated, since the suite is designed to handle both minimally invasive percutaneous, hybrid operations and open surgical procedures.2

This also means a one-stop point of care for many patients who can have imaging and treatment in one setting, where multiple trips were required in the past. The new OT will create the optimal setting for interventionists and surgeons to work synergistically, allowing operators to transit seamlessly from minimally invasive to open surgical procedures (when necessary), thereby minimising the risk to patients, reducing the overall time in the hospital and allowing a speedier recovery.

The hybrid OT is therefore truly patient-centred, bringing multiple care providers and varied expertise right there in one room at the patient’s side. Of course, this requires collaboration between departments and disciplines, working in alignment to achieve success.

An integrated setting also means saving time and manpower because more procedures can be completed in the same room by the existing staff without increasing the strain on the team and without relocating equipment or personnel from another department.

Prior to each case, all team members, including the surgeon, interventionist, nurse, scrub technician, anesthetists and imaging technologists, meet to communicate the goals of the procedure and what type of imaging should be used to accomplish them.

Below are some of the types of cardiac and vascular procedures which can be performed in the hybrid OT:
- Minimally invasive cardiac surgical procedures
- Combined carotid artery stenting and open heart surgery
- Combined angioplasty with minimally invasive valve surgery
- Percutaneous (catheter-based) heart valve replacement and repair
- Treatment of cardiac arrhythmias
- Aortic aneurysm repairs
- Combined open and endovascular procedures
- Percutaneous (catheter-based) vascular procedures

Truly, the sky is the limit.

For patients, we expect treatment in the new Hybrid OT to result in:
- More minimally invasive procedures
- Fewer surgical complications
- Shorter hospital stays
- Faster recovery time
- Improved patient outcomes
- Treatment for patients who otherwise would not have an option

In conclusion, the hybrid OT facilitates a whole new spectrum of cardiac and vascular surgical therapies. It is an essential resource of every cardiovascular centre.

References
Tinnitus is a very common problem that could afflict people with normal hearing or with hearing loss. Patients with tinnitus have much fear and anxiety and they are worried it is a sign of serious disease. Despite tremendous advances in research, the exact mechanism for tinnitus is unknown. However, the causes of tinnitus may be multifactorial and treatment is multifaceted. At CGH, our tinnitus management team runs a successful treatment programme known as the Tinnitus Evaluation-Rehabilitation Programme (TERP). This is a multi-disciplinary programme initiated in 2008 and aims to look at every aspect of the treatment process. It is the first of its kind in Singapore. To-date, the program has seen about 600 patients.

The focus of the tinnitus service is to provide information on hearing physiology and to educate the patient on tinnitus information, tools and coping strategies.

The aims of this tinnitus counselling are:
- To change the patient’s expectation for a ‘cure’
- To reduce anxiety, fear, depression and any negative reactions
- To introduce self-help coping strategies
- To let patients know that help is available when tinnitus becomes unbearable

PHASE ONE
At the counselling session, the patient is given a questionnaire to answer and the answers are discussed. An interview then takes place to find out the history of their tinnitus, localisation, intensity and temporal variability. Pictures, models and diagrams are used to help the patient understand the auditory pathway in correlation with their audiometric results. This interaction establishes a rapport with the patient.

Different types of coping strategies using environmental sounds, music therapy, non-wearable and wearable sound devices are explained. Detecting trigger factors and cognitive behavioural therapy, and how our brain’s interpretation of auditory signals is connected with our perception and thinking processes and how habituation works are explained.

Printouts on tinnitus are given at the end of each counselling session. The patient is given the opportunity
to work with their tinnitus. Every counselled patient will be given an email address and hand phone as helpline.

All patients are given a three-month appointment to review the outcome of their tinnitus management.

**PHASE TWO**

Patient who are unable to manage tinnitus despite initial counselling, will be offered the Tinnitus Retraining Therapy (TRT) concept. In this treatment package, the team (Otologist, Tinnitus Counsellor/therapist, Audiologist, Psychologist) will concurrently manage the patient over a 6-month period.

The neurophysiological model of tinnitus is explained and any medical concerns addressed. The patient will then meet the tinnitus counsellor/therapist to discuss sound therapy options. Patients can select a noise generator, hearing aids, music CDs, bedside sound device or use environmental sounds. Progress with habituation is monitored after one month then two months and three months. Depending on their profile and condition, the patient would be referred to the psychologist for evaluation.

Over a six month treatment programme, the patient would have undergone a full ENT evaluation by the Otologist, received counselling and gained insights on tinnitus, clarified expectations of recovery and developed sufficient coping strategies, addressing any emotional or sleep issues and received technical inputs on any wearable sound devices.

For more information and details on the Tinnitus Service, please contact CGH at 6850 3333.
Dental disease, though of low morbidity and mortality impacts quality of life and many hours are spent in the dentist’s clinic repairing the ravages of dental decay and gum disease. Such treatment is costly especially when it occurs in young children, as several resources need to be marshalled to treat the pre-cooperative or often uncooperative child.

The concept of prevention, though well accepted in the medical and dental fraternity, does not translate into behavioural change in Singaporeans. In 2006, an oral health survey of 6000 adult Singaporeans indicated that only 45.5% visited the dentist once a year for a check up. 31% of Singaporeans will only visit a dentist when there is pain. The survey revealed gaps in the knowledge and practices of Singaporeans regarding dental health. Though no survey was done on Singaporeans’ knowledge, attitude and behaviour on their children’s teeth, it is safe to assume that parents are even less likely to bring their children for check up than they would themselves. This is regretful as 40% of preschool children in Singapore have a severe form of decay called Early Childhood Caries (ECC).²

This low attendance rate can be attributed to the misconception (even in the medical community) concerning primary teeth i.e., they can be left to rot, as they will drop out anyway. This could not be further from the truth. Primary teeth are replaced slowly between the ages of 6-12 years. During this time, they are needed for function, speech and aesthetics. Primary teeth can get infected, which can affect the development or eruption of the permanent teeth. Rotten primary teeth pave the way for rotten permanent teeth. From a moralistic and legal standpoint, the child has a right to a pain free dentition. In America, dental neglect is ranked closely to child abuse and is a reportable crime.

In the 1900s, the American Academy of Paediatric Dentists recommended the child’s first dental visit to be at age 2-3 years. This age was arbitrarily chosen because it was thought that by 3 years, the child would be able to cope socially in a dental setting. However, by then, many children had developed ECC. In fact extensive dental treatment rather than preventive work was needed. A better understanding of the aetiological factors to ECC has prompted the Academy to change its recommendation that the child’s first dental visit should be by age 1 year or shortly after the first tooth erupts. The considerations that led to this change are:

1. ECC is an infectious disease, the infective agent is strep.mutans, an oral bacteria.
2. Infants are infected with strep.mutans by their parent (usually mother) or caregiver through saliva.
3. Mothers who have high levels of strep. mutans in their saliva are more likely to infect their infants.
4. Early infection of strep.mutans increases the risk of ECC. High levels of strep.mutans have been detected in children as early as 9 months of age.
5. It is possible to assess an infant's risk of developing ECC through clinical examination, salivary test and lifestyle questionnaire.

Please turn overleaf
Infant Oral Health Clinic at NDC

The Infant Oral Health Clinic at NDC is the first in Singapore that runs a preventive oral health program for mothers and their infants. Taking prevention seriously, Paediatric Dentists assess infants' caries risk, which includes identifying risk of strep.mutans infection from their mother, monitor oral development and customise a preventive treatment plan based on the risks identified.

Each year, NDC treats 500 preschoolers for ECC. Their treatment ranges from total extraction of all primary teeth, to full mouth restorations. Parental ignorance on infant dental care is the incriminating factor. We hope that with concerted efforts of medical and paramedical professionals and all professionals who deal with children, we can reduce the prevalence of ECC. Education and timely referral is a first start in this direction.

For more information on ECC, go to www.ndc.com.sg/EarlyChildhoodCaries
GP enquiries: capp@ndc.com.sg

References