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More Vaccines to More Children

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How should we measure advances in paediatrics? Should we consider the elegance and complexity of science? The novelty of discovery? Individual suffering averted? Or the absolute number of lives saved? Most advances published in the scientific literature or implemented by policy makers have potential value, but there can often be opportunity costs. The value of vaccines is considerable and is probably understated. For the greater part, there are few opportunity costs, with vaccines representing one of the most cost-effective of all health and social interventions. Although many vaccines can reflect the very best cutting-edge science, the more basic task of getting measles vaccine to impoverished children in remote villages is likely to represent a greater achievement. Confronting the question why children are not being vaccinated, in both rich and poor countries, is critical. As paediatricians we should support every child to receive every vaccine that safely and effectively reduces the burden of childhood diseases. Decisions on what vaccines should be incorporated into National Immunisation Programmes (NIP) are complex but surprisingly many children still do not receive all the vaccines that they should. A McKinsey & Co report concluded decision-makers need the following to support the adoption of a new vaccine within a NIP: proof of local disease burden; proof of a safe and effective vaccine; convincing health economics; limited negative effect on existing vaccines; support from clinical opinion leaders; no concerns raised by general practitioners and parents; and, ideally, funding from external sources. Issues of cost and affordability are often cited by policy makers when failing to introduce vaccines into NIPs. Yet affordability often has more to do with government priorities than lack of funds, and high costs in part reflect a failure to negotiate with the pharmaceutical industry. For example, the safety and efficacy of two new rotavirus vaccines have been documented in both developed and developing countries, with economic evaluations conducted to derive "break-even" prices and cost-effectiveness data. In June 2009 WHO recommended the inclusion of rotavirus vaccination of infants into all NIPs. Yet as of June 2011, only 28 countries have implemented this recommendation. Accumulating data indicate that early adopters of rotavirus vaccines have seen very significant reductions in childhood diarrhoeal disease morbidity and mortality. Despite the availability of comprehensive data, purported as necessary by decision-makers, many governments, particularly in the Asian region, appear less than enthusiastic about rotavirus vaccines. We can speculate as to why this might be ~ but there is a clear need for paediatricians to advocate for more children to receive more vaccines, in Hong Kong, across the Asia region, and globally. That would represent a very real advance.

Pre- and Probiotics in Infant Formula: What is the Evidence?

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Infant formulas are increasingly supplemented with probiotics, prebiotics, or synbiotics despite uncertainties regarding their efficacy. A host of different benefits have been attached to infant formula supplemented with pre- and probiotics to promote various health aspects of infants. For example, addition of certain strains of probiotics in

infant formula have been claimed to promote growth, reduce gastrointestinal infections, respiratory symptoms, colic, crying and irritability, as well as improves stool consistency in infants. It has also been suggested that probiotics-added infant formula reduces incidences of allergy in young infants. Infant formula supplemented with prebiotics, on the other hand, have been claimed to promote growth, improve tolerance, stool pH and frequency, and prevent infection in infancy. However, many of these health claims are not substantiated with randomised trials. Thus, at present, there is insufficient evidence to recommend the routine use of probiotic- and/or prebiotic-supplemented formulas. There is a great need for well-designed and carefully conducted randomised controlled trials, with relevant inclusion/exclusion criteria and adequate sample sizes. At present, as most of the trials were industry-funded, independent trials, preferentially financed jointly by national/governmental and other international organisations, would be desirable.

Importance of Optimising Nutritional Status of Preterm Babies

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Nutrition is an important aspect of health care which is often neglected or compromised in the neonate because of other more urgent "life-threatening" problems. Preterm babies are especially susceptible, not only because of reduced stores which otherwise would have been accrued if the pregnancy had been carried to term, but also because they require more time and effort to achieve "catch-up" growth.

However, recent studies have demonstrated that achieving "catch-up" growth too rapidly can result in these babies developing complications related to obesity and metabolic syndrome.

There has also been a significant shift in infant formula development in recent years, especially with regards to preterm formulas. Previously, the focus had been on adding micronutrients to formula in their quest to move closer to the reference standard, that is, breast milk. Currently, an increasing number of milk companies have shifted this focus to improving the quality of the macronutrients, so as to be as close to breast milk as possible.

The main thrust of all these efforts to develop the "magic bullet/formula" especially for preterm babies is so that these babies would still attain acceptable growth without compromising too much on development, as compared to their full-term peers.

Vitamin A Deficiency and Early Brain Development

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Vitamin A deficiency (VAD) is one of the three most popular nutrient deficiency diseases in the world. The numerous studies have suggested that vitamin A and its active derivatives (retinoid acid, RA) are essential competence factors for cell proliferation, apoptosis, differentiation, especially in brain development and maintenance of brain function. But vitamin A and brain development in children and it's mechanism is not clear.

Our several population-based studies in Chongqing city from 2002 to 2009 showed that the VAD incidence is 7-10%, and marginal VAD (MVAD) incidence is 30-40%. Further we found vitamin A placental transport ratio (VA-PTR) is positively associated with the motor area DQ and average DQ of baby at 2 year old. The cord VA level is significantly positively associated with language area DQ and social area DQ of baby.

Then we identified the effects of MVAD and vitamin A intervention (VAI) on learning, memory and the hippocampal CA1 long-term potentiation (LTP) in young rat. We realised that MVAD beginning from embryonic period impairs learning, memory and LTP, and the losses might not be reversible if the vitamin A supplementation is late especially missing the critical period of hippocampus development.

LTP is a physiological basis of learning and memory. Therefore, we try to reveal the underlying mechanism how VAD impairs the LTP. Firstly we explained the expression and location pattern of RA receptors in the cortex and hippocampus during postnatal development in rat. In cortex and hippocampus, RARα was the advantage of receptor subtypes, and presented a nearly unimodal trend with increasing developmental maturity of the nervous system. Interestingly, RARα expression was mainly located in the cytoplasm in the postnatal development apart from early stage. This was a phenomenon of intracellular translocation. These results supported the idea that the RA functions may be mainly dependent on the non-transcriptional regulation. It is inconsistent with a traditional viewpoint according to which RARα, as a nuclear transcription factor, is mainly

expressed inside nucleus.

Because the Ca2+ influx via N-methyl-D-aspartate (NMDA) receptor ion channel is the initial induction signals of LTP. So we deeply found that VA affects the expression of NR1 and NR2β. Moreover the NMDA-induced Ca2+ excitability revealed decreased excitability in hippocampal slices from VAD during postnatal development. VAD also had decreased NR1 expression in postnatal development. Furthermore, primary hippocampal neurons in culture showed increased neuronal Ca2+ excitability in response to RA. We also found that weaker calcium excitability and lower expression of NR1 after specific silencing RARá in vitro. Finally, we through several vivo and vitro studies illustrated the new idea that continuous postnatal VAD inhibits RARá expression, which decreases NR1 expression via non-transcription, and then inhibits hippocampal neuronal Ca2+ excitability to damage the LTP, finally producing deficits in active learning and spatial memory in adolescence.

Recently, we also found vitamin A is relatively important in Alzheimer's disease.

Pediatric Sleep Disordered Breathing

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Beijing Children's Hospital, Capital Medical University Beijing Children's Hospital (BCH) first established a one-bed sleep laboratory (lab) in 2002 and then a new sleep center with 6 beds was opened in 2005. There are two pediatric sleep labs in mainland China now. Besides, sleep services are offered outside of the pediatric sleep labs in various departments of children's hospital and pediatric department in general hospitals. However, the waiting list for sleep monitoring is still quite long. Night time snorers are the major population coming for sleep study.

In 2002, a questionnaire survey was performed in children in eight major Chinese cities, and as many as 28424 children were recruited. The result showed that 27.1% of them had sleep disorders. Another questionnaire survey in Shanghai showed a prevalence of snoring of 16% in 1812 children. The impact of OSAHS on quality of life and a dramatic improvement in quality of life after adenotonsillectomy was demonstrated by ENT surgeons. The impact of hypoxemia on hearing and cognitive function in OSAHS children were reported as well. A positive relationship between the degree of obesity and the severity of OSAHS was reported based on a case-control study. Furthermore, a recent study showed a positive relationship between OSAHS and metabolic syndrome. Interestingly, one of our recent studies has demonstrated that an active leukotrienes (LTs) mediated inflammatory response is involved in pathophysiology of sleep disordered breathing (SDB), which might provide a theoretical evidence for LTs modifying therapy in treating pediatric OSAHS. Besides, the efficacy of various treatments such as surgery, and non-invasive ventilation were also investigated in numerous studies in Chinese pediatric population.

Current data showed that SDB are common in Chinese pediatric population and sleep disorders can lead to serious morbidity if left untreated. We expect more sleep services could be provided for Chinese children and we are looking forward to more exchanges and cooperation with doctors and institutes in the field of pediatric sleep medicine.

Haematopoietic Stem Cell Transplantation in Children: 20 Years Experience in Hong Kong

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The paediatric Bone Marrow Transplant (BMT) Unit at Prince of Wales Hospital performed the first allogeneic Haematopoietic Stem Cell Transplantation (HSCT) in 1991. The patient suffered from chronic myeloid leukaemia and the donor is her HLA identical sister. The patient is in continuous remission for 20 years after HSCT. Since then, the two paediatric BMT units at Prince of Wales Hospital and Queen Mary Hospital have expanded the transplant activities from leukaemia to various serious paediatric diseases which may benefit from HSCT. Other than haematological malignancies, bone marrow failure syndromes and haemoglobinopathies are the other two common conditions treated by HSCT in our locality. Paediatric cancers other than leukaemia are treated primarily by autologous HSCT, stage 4 neuroblastoma is the most common indication. Diseases specific to children such as immunodeficiencies and hereditary metabolic diseases are also treated by HSCT. In the past 20 years, there is a change in the pattern of diseases being transplanted and also the choice of donors. Chronic myeloid leukaemia is seldom transplanted nowadays because of the effective target therapy by tyrosine kinase inhibitors. The indication of HSCT in acute lymphoblastic and myeloid leukaemia is

getting more strict. With more effective anti-leukaemia treatment, more patients can now be cured with chemotherapy based treatment. The newly emerged enzyme replacement therapy for metabolic diseases also makes the indication of HSCT in such diseases more controversial. In the 1990s, sibling HSCT had been performed in more than 70 thalassaemia major patients but it is now becoming uncommon. The number of new thalassaemia major cases have dropped significantly due to efficient prenatal screening and diagnosis. The establishment of voluntary bone marrow donor bank in Hong Kong facilitates the search of unrelated BM donors. With the advances in HLA typing technology, we are now able to identify well matched unrelated donors that lead to marked improvement in transplant outcome. The BMT centres are now more willing to apply unrelated donor HSCT for diseases which might not be eligible for HSCT previously, e.g. aplastic anaemia and thalassaemia major. Another donor choice with wide publicity is the umbilical cord blood which has moved from sibling cord blood to unrelated donor cord blood. The establishment of public cord blood bank at Hong Kong Red Cross Blood Transfusion Service in 1998 has provided another efficient channel for searching and performing HSCT for children in urgent need for transplant. Double unit cord blood transplant by combining two units of unrelated cord blood units further enhances the chance of getting suitable stem cell for HSCT. More recently the stem cell processing technology of depleting B and T cells in the graft allows the use of less well matched donors for HSCT, such as the haplo-identical parents as HSCT donors. For patients requiring urgent HSCT but without suitable unrelated donors, or failed engraftment after first transplant, the haplo-identical HSCT is virtually possible for all children as there is always a parent donor available.

For the past 20 years, PWH has performed 360 HSCT for children with various diseases. The outcome depends very much on the primary disease, the disease status, the choice of donors and the advancement in management of transplant complications. Use of cellular therapy for treatment of underlying diseases or transplant related complications will be the next major milestone in HSCT development. The future HSCT Unit at Centre of Excellence in Paediatrics provides a golden opportunity for a newly designed unit with state of the art clinical and laboratory facilities for service, education and research.

Application of Mesenchymal Stem Cells in Hematologic System Diseases

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Mesenchymal stromal cells (MSCs) are a type of non-haematopoietic cells with lack of specific molecular markers. MSCs have the ability of multipotent differentiation, they have been operationally defined to differentiate into osteoblasts, adipocytes and chondrocytes after in vitro expansion. MSCs interact with cells of both innate and adaptive immune systems, leading to modulation of several effector functions, but they only evoke little immune reactivity. Moreover, MSCs are found to be located in bone marrow niche. They produce growth factors and cytokines that promote hematopoietic cell expansion and differentiation. Recently, MSCs obtained from patients with haematologic system diseases such as leukemia, aplastic anemia and immune thrombocytopenic purpura, are found to be abnormal in morphology and function. Furthermore, MSCs have emerged as a promising therapeutic modality for tissue regeneration and repair in clinic. MSCs have been widely applied in the field of haematopoietic stem cell transplantation. MSCs are capable of enhancing engraftment of haematopoietic stem cells and promoting haematopoietic recovery after transplantation. Preliminary clinical studies on cotransplantation of MSCs have shown an improvement in or resolution of severe acute and chronic graft-versus-host disease. However, MSCs might increase the risk of malignant recurrence for the patients with haematological malignancies. The standardisation of protocols for isolation and expansion of MSCs in vitro, the safety of such cell-based therapies and the homing and engraftment of MCSs to their target tissues still need to be resolved in future. In this manuscript, we will summarise recent progress of clinical application and research of MSCs in haematologic system diseases.

To Give or Not to Give, the Blood Products Issue in Paediatric Haemolytic Uraemic Syndrome

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Haemolytic uraemic syndrome (HUS) is a well known complication in children often associated with *E. coli* and

pneumococcal infection. It is part of the childhood thrombotic microangiopathies (TMA) spectrum which includes diseases with the manifestations of microangiopathic anaemia, thrombocytopenia, fever, renal impairment with or without neurological involvement. The underlying mechanisms can be very different but it has an impact on the management, especially in terms of blood products administration. Thrombotic thrombocytopenia purpura (TTP) is the prototype of TMA. It is frequently associated with autoimmune diseases such as SLE and in children, neurological deficit is often absent. If one encounters patients with DIC picture without elevated D-dimer, childhood TTP has to be ruled out. Giving platelet transfusion to these patients may induce massive thrombo-embolism due to the accumulation of ultra-long von Willebrand factor (vWF) in the circulation caused by the deficient or dysfunctional ADAMTS-13 protein, which is supposed to cleave the vWF to proper size. Proper management includes plasma infusion or even plasma exchange transfusion. This is actually not a very rare condition and familial form of relapsing TTP has been reported in our local population. The *E.coli* associated HUS (or diarrhea +ve HUS) is another form of TMA and it is caused by the Shiga toxin secreted by the O-157 (endemic form) or O-104 (recent German outbreak) strain *E. coli*. This form of HUS is relatively uncommon in our locality probably due to our dietary habit of not eating raw beef frequently. The blood product administration is not a major concern in this form of TMA. Finally, we experienced a surge of HUS associated with invasive pneumococcal infection (Diarrhea -ve HUS) over the past 2 or 3 years. Interestingly, most of them were of the serotypes (i.e. type 3 & 19A) not covered by the 7- or 10-valent pneumococcal vaccines. This form of HUS requires washed blood products because infusion of plasma rich products may aggravate the blood and renal damage. The reason is that most plasma contains T-antibody and in pneumococcal HUS, pneumococci release *neuraminidase* and it cleaves and exposes the capped Thomsen-Friedenreich antigen (T-Ag) on the surface of red cells, platelets and glomerular endothelial cells to the circulating T-antibody. Then it will trigger complement lysis and organ damage. Therefore, proper recognition and management of childhood TMA is important to avoid iatrogenic damage to the patients especially during blood products administration.

Nutrition and Growth in Early Childhood: What is the Evidence from Randomised Controlled Studies?

TF **Leung**

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Breast milk offers the best nutritional support for optimal growth and neurodevelopment in infants. However, some newborns have to be fed on milk formula for various maternal and neonatal reasons. There has been concern that infant formula causes rapid early weight gain, which predisposes to later obesity and compromised cardiovascular health. The ingredients in infant formula which accounts for excessive weight gain are unclear, but recent studies suggest high protein content to be an important reason. Koletzko et al. reported in a multi-centre study of 1138 healthy European infants that a higher protein content of infant formula was associated with higher weight in the first 2 years of life. Term small-for-gestational age infants fed on nutrient-enriched formula had enhanced linear growth but poorer neurodevelopmental performance than breastfed infants at 9 months.

Infant formulae are commonly supplemented with a range of additives such as essential polyunsaturated fatty acids (PUFAs) and nucleotides with the claim to simulate the content of human milk. Docosahexaenoic acid (DHA) and arachidonic acid (ARA) are two long-chain PUFAs of potential importance in visual and cognitive development of growing children. Early randomised clinical trials showed that supplemental DHA in infant formula or solid foods improved sweep visual-evoked potential acuity. In the contrary, Scott and colleagues reported absence of beneficial effects of DHA with or without ARA supplementation on IQ, receptive and expressive vocabulary, visual-motor function and visual acuity of children through 39 months. Another clinical trial of Norwegian infants exposed to early dietary very-long-chain PUFA supplement found better cognitive function at 4 years but not 7 years. On the other hand, a recent study of high-dose DHA supplementation in preterm infants found increased linear growth at 4, 12 and 18 months corrected age and improved neurodevelopmental outcome in girls at 18 months.

Dietary nucleotides are non-protein nitrogenous compounds that are thought to be important for growth, repair and differentiation of the gastrointestinal tract. Nucleotide supplementation was shown to have notable effects on the composition of gut microbiota, circulating

levels of IGF-I, IGFBP-3 and other hormonal biomarkers as well as antibody responses to immunisations. Nonetheless, it remains to be confirmed whether these findings translate to clinical benefits in well-nourished infants. Besides, there is no study of the long term effect of nucleotide supplementation on childhood growth and nutrient adequacy.

Preschool children with picky eating behaviour consume a limited diet with insufficient nutrients and have increased likelihood of being underweight. Nutritional counselling is a conventional intervention for such children, but counselling alone may be inadequate to optimise the growth of these picky eaters. My group has recently completed a multi-centre, randomised controlled trial of a balanced growing-up milk formula in Chinese picky eating preschoolers whose weight-for-height was <25th percentile. Seventy-seven subjects were randomised to the study formula with nutritional counselling and 76 controls were allocated to nutritional counselling alone. At the end of this 4-month study, children in the intervention group had improved total energy intake, weight gain and micronutrient adequacy than control children. This study highlights the importance of both growing-up milk formula and nutritional counselling in managing young picky eating children.

Whole Exome Sequencing for Primary Immunodeficiencies

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Primary immodeficiencies (PID) comprise more than 150 genetically defined diseases presenting with different phenotypes including infections, autoimmunity, autoinflammation, haemophagocytonis, cancer and allergy. Detailed study of the disease mechanisms and genetic etiologies of PID has helped understand how to approach other patients with similar phenotypes.

To promote care, education and research in PID in Asia, we have established the Asian PID Network which links 40 hospitals in China and Southeast Asia. Over the last 10 years, we have had performed genetic studies in more than 500 patients and led to genetic confirmation of PID in 272 patients, as well as generating new knowledge on unique phenotypic observations in PID patients.

For the patients without genetic confirmation of their PID, we are now starting a program of whole exome sequencing (WES) to help define novel PID genes, as well as gain clinical and bioinformatic experience in how to incorporate WES in the future clinical diagnostic pathway for monogenic disease. In 2009, we have started to employ WES to identify genetic mutations in a boy with perianal sepsis and neonatal-onset colitis. We further submitted 8 patients with distinctive immunodeficiencies for WES after extensive exclusion of potential candidate PID genes. Potential causative genes have been identified in some but confirmation will take time. In the present literature, at least 6 genetic etiologies of PID were reported to be identified by WES, which heralds the new era of using such technology to define novel PID genes.

Epidemiology of *Streptococcus Pneumoniae* Infection in Asia

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Streptococcus pneumoniae is the most important bacterial pathogen causing community-acquired pneumonia, meningitis, otitis media, and septicaemia in children. Similar to other parts of the world, many children suffer from the infection with a high mortality and a high morbidity every year in Asia. The epidemiology of *S. pneumoniae* infection changes with time and with different geographic locations. Recent data showed that predominant serotypes, disease pattern, incidence of invasive disease, and antibiotic-resistant rate varied significantly among different areas in Asia. Penicillin-nonsusceptible *S. pneumoniae* is more prevalent in Taiwan, Korea, Vietnam, Thailand, and Japan, as compared with a relatively low prevalence rate in India, Malaysia, Singapore, and Indonesia. Possible affecting factors may include differences in disease susceptibility, carriage rate of *S. pneumoniae*, overuse of antibiotics, and other environmental factors. In addition to an increasing prevalence of antibiotic-resistant *S. pneumoniae*, the disease pattern also changes with time, especially with regard to the recent emergence of severe *S. pneumoniae* pneumonia with empyema. Similar to other areas, serotype 19A is becoming one of the predominant serotypes responsible for invasive pneumococcal disease in Asian children. In conclusion, *S. pneumoniae* is associated with a tremendous disease burden in Asian children. Effective measures for prevention and treatment are crucial to ensure a healthy life of children in Asia.

Pediatric Education in China: Current Status and Challenges Ahead

Y Gui

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It has been over 100 years since the establishment of China Modern pediatric education system. From the early 20th century to present, China has experienced several stages of developments, and gradually set up a modern education system including types of school education, postgraduate education and continuing education.

In the early 20th century, China established a "Western Medicine" education system and set up the medical college. The system is still the same that medical students are trained to be pediatricians after 5-year undergraduate medical education and pediatric residency training.

In 2004, eight leading universities, were authorised by the Ministry of Education to conduct 8-year program to meet the current and future requirements of society, The students of 8-year program will spend the first two years to receive general education to have good virtues and professional competency and embrace beauty and goodness. We renewed the curriculum, such as integrated courses, bedside teaching and case-based group discussion/ PBL session, encouraging earlier clinical exposure and self-directed learning. The assessment tools also were modified, by using OSCE (objective structured clinical examinations) before and after internship to improve the clinical skills and communication skills.

Since 1950s, China has built up over 100 children's hospitals as well as maternal and child care service centers, covering most of the pediatric residency trainings while only a small part of the training were in general hospitals. In the 1980s, MOH established pediatric residency training system. In recent years, Shanghai and Beijing has started a 3+2 residency training system similar to that in Western Country.

Chinese pediatric continuing education also has developed rapidly. There are above 1000 pediatric continuing training programs in different provinces each year now. 20 credits of continuing education are required every year.

After these years' innovation in medical education, we have already got positive outcomes. We will continue to develop students into medical professionals with good medical professionalism and excellent basic medical knowledge, ability to innovate and conduct scientific researches, good communication skills and team spirit.

Children's Medicines: Past, Present and Future

T Stephenson

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Medicines for children – can we do better? The answer is yes. Indeed it is very timely that we do improve the research base for prescribing for children. I will begin by reviewing some of the historical obstacles to research in children.

I will follow this by describing some of the improvements in the last 20 years, the period when the Hong Kong College of Paediatricians has existed, which will help us to provide evidence to inform paediatric prescribing. In the UK NHS Research & Development program, a national research network to deliver faster progress in developing drug evidence for children is one of 5 priority areas. £20 million has been set aside for this over a period of 4 years. In addition, European wide legislation provides powerful incentives for the pharmaceutical industry to study medicines in children to a greater degree than has been the case in the past.

In my talk, I will seek to show that most of the perceived obstacles to researching medicines in children can be overcome. I will illustrate this with reference to three recent drug trials in children:

1. The PIVOT Trial is the first randomised controlled trial comparing oral and intravenous treatment for children with community acquired pneumonia who require admission to hospital. 240 children recruited. (Thorax 62, 1101-1106, 2007. Lead investigator: Prof Terence Stephenson)
2. Buccal Midazolam vs Rectal Diazepam. A randomised controlled trial of emergency treatment of seizures in children. 219 episodes in children studied. (The Lancet, Volume 366, Issue 9481, Pages 205-210, 16 July 2005 Lead investigator: Prof Imti Choonara)
3. Oral prednisolone for preschool children with acute virus-induced wheezing. (New England Journal of Medicine 2009 Jan 22;360(4):329-338. Lead investigator: Prof Jonathan Grigg)

I will also give a brief insight to exciting future developments in children's drug treatment.

However, paediatricians themselves can also be obstacles to better prescribing for children. Every one of us needs to translate research into paediatric practice.

Neonatal Cholestasis: From London to Hong Kong

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Neonatal cholestasis is one of the most common presentations of liver diseases in infancy. After excluding the surgical problems such as biliary atresia or choledochal malformations, the differential diagnosis is still numerous. With the advancement in understanding the path-physiology, the management of this problem becomes more sophisticated and complicated. The Children's Liver Centre of King's College Hospital is one of the paediatric liver transplant centres in the United Kingdom, which manages about one hundred new cases of neonatal cholestasis per year and performs fifty to sixty cases of liver transplant per year. The Centre has well established liver and transplant team that includes paediatric hepatologists, pathologists, radiologists, surgeons, transplant surgeons, transplant coordinators, dietitians and nurse specialists. They provide comprehensive and holistic care to these patients. However, as a paediatrician in Hong Kong, we are facing a lot of problems in managing these cases. We have limited experiences, limited expertises and limited laboratory supports. At the same time, the experiences of Western Countries cannot apply directly as the etiology is not exactly the same. Hong Kong, one of the international finance centres, has seven million populations, does deserve a paediatric liver centre for better care to our patients, better training to our staff and better linkage to the world.

Exploring the Aetiology of Neonatal Cholestasis in Mainland China

JS **Wang**

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Cholestasis is the commonest presentation of liver diseases in infancy. In the past, a significant proportion of cases had been attributed to idiopathic neonatal hepatitis. With the advent of molecular medicine in the past few decades, a series of genetic entities, including progressive familial intrahepatic cholestasis (PFIC) types 1 to 3, congenital bile acid synthetic defects (CBASD), Alagille syndrome, citrin deficiency, and many others have been identified from this heterogeneous group.

Nowadays, neonatal cholestasis is the leading cause of admission and mortality in pediatric liver diseases in Mainland China. Most cases were wrongly attributed to cytomegalovirus (CMV) infection in the past. After my training in pediatric liver diseases with the support of the HM Lui Memorial Fund in 2003, I have determined to explore the etiology of neonatal cholestasis, especially the genetic causes, in Chinese patients.

Firstly, my group explored the significance of ATP8B1 deficiency (also called FIC1 deficiency) and ABCB11 deficiency (also named BESP deficiency) in low GGT progressive familial intrahepatic cholestasis (PFIC 1 and 2). It was found that either one accounts for about 1/3 of our cases. At the same time, we diagnosed a series of Alagille syndrome which were verified by JAG 1 sequencing. We found it was the most common cause of cases misdiagnosed as biliary atresia. Recently, ABCB4 deficiency, CBASD-1, CBASD-3 and a few other very rare cases were diagnosed by genetic study in our center. Apart from the above-mentioned entities which were first demonstrated in Mainland China by our group, we also found citrin deficiency to be the commonest cause of cholestasis with abnormal aminoacidemia in Chinese and accounted for a significant proportion of cases referred to our center for cholestasis.

By presenting our studies in national or international liver and pediatric conferences and lecturing in dozens of conferences and CME courses, the concept of genetic disorders playing a significant part in neonatal cholestasis has been widely accepted in Mainland China. Consequently, the prognosis for some patients has been significantly improved. Nevertheless, studies to explore other etiologies and promotion of the scientific knowledge of the hereditary disorders causing childhood cholestasis are necessary to enable further advancement in the field.

Maternal and Child Mortality in Xinjiang Uyghur Autonomous Region, China

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Despite China's achievements in reducing maternal and child mortality, significant disparities still exist. While regional disparity and income disparity are widely studied and reported, MCH (Maternal and Child Health) studies

about minority regions and racial disparity are rare both in Chinese and western medical literature. In this review, published data about maternal and child mortality in Xinjiang Uyghur Autonomous Region, China, were analyzed in the context of current recommendations on intervention, and some recommendations are made to improve the situation.

Xinjiang Uyghur Autonomous Region has one of the highest maternal and child mortality in China. Ethnicity is related to poverty, and poverty is associated with significantly higher maternal and child mortality. Health facilities and health insurances are improving with increasing investment from the government. However, most mothers and children died in poor counties that do not utilise existing health care facilities and affordable health insurances.

While current developments in facility-based care are crucial in reducing maternal and child mortality, it is far from sufficient to fully address the problems faced by vulnerable population. More attention should be given to outreach and extend home/community based health care in order to bridge the gap between the developing health facilities and poor, isolated communities.

Intra-Articular Steroid Injection for Patients with Juvenile Idiopathic Arthritis – Experience of the Prince of Wales Hospital Hong Kong

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Intra-Articular Steroid Injection (IAI) is an established treatment for Juvenile Idiopathic Arthritis (JIA). It can be used as the sole agent in JIA subtypes with small number of affected joints. Together with other Disease Modifying Anti-Rheumatic Drugs (DMARDs), it provides rapid control of the injected joints in those with polyarticular course, much faster than using systemic agents alone. Early use of IAI can prevent joint damage, contractures and leg length discrepancy.

We retrospectively reviewed our IAI cases performed between December 1999 and July 2011. Over the past 11 years 30 joints were injected (12 patients, 24 separate sessions). The median remission time is 15 months. About 50 percent of joints remain in remission one year after injection. In 2009 we introduced Triamcinolone Hexacetonide, a more potent steroid preparation, to replace Triamcinolone Acetonide. In addition, all injections were performed under image guidance. Preliminary data shows that more patients who received injection after 2009 remain in remission at 1 year.

This is a very small cohort of a single local hospital. We look forward to collaboration with other teams and hospitals for a better coordination of this service.