disability, primarily related to birth asphyxia.

In 2003, there are 199,000 disabled children between 0
and 6 years old each year, 54.2% of whom are mentally
disabled, primarily related to birth asphyxia.

The Neonatal Resuscitation Program (NRP) was in-
troduced to China in the 1990s to reduce mortality
and morbidity caused by asphyxia. NRP training was
held in cities such as Beijing and Shanghai, which
helped to build the foundation of the NRP in China. To
disseminate the NRP throughout China, a multidisci-
plinary partnership was established among the Chi-
nese Ministry of Health, Chinese Perinatal Society,
Chinese Nursing Association, American Academy of
Pediatrics, and Johnson and Johnson Pediatric Insti-
tute. In July 2003, a task force that consists of repre-
sentatives from all partners made a 5-year commit-
tment to set up “Freedom of Breath, Foundation of
Life: China Neonatal Resuscitation Program.” The ob-
tective was to ensure the presence of at least 1 trained
health care professional at every delivery. It has been
3 years since the program launched, and many key
accomplishments have been made:

1. The Chinese version of the fourth and fifth editions of
the NRP manual (created by American Academy of
Pediatrics and American Heart Association) was pub-
lished.
2. Chinese NRP editions were made with Chinese cul-
tural considerations to guide neonatal resuscitation
practices in China.
3. Since July 2004, many training sessions have been
organized, including a national instructors training,
provincial instructors training(s) in 30 provinces
(there are a total of 30 provinces in China), and
cascading trainings in cities, counties, and townships.
To date, 18240 health care professionals have been
trained, among them obstetricians, pediatricians,
nurses/midwives, and anesthetists. By the end of
2006, NRP training had covered 99.1% of health care
institutions in cities and 59.8% in 20 target provinces.
4. On September 20–23, 2006, the NRP Science Updates
and Experience Sharing conference was held in Xian,
capital city of Shaanxi in the northwest part of China.
One hundred fifty health care professionals from 20
target provinces attended to learn of scientific updates
from Drs Keenan and Niemeyer. Each province pre-
sented their training reports and summaries; a few of
them were rewarded for their excellence of perfor-
mance.
5. Since the launch of the NRP, many provincial health
bureaus included neonatal resuscitation skills into
midwifery service licensing. By the end of 2007, it
will become a nationwide regulation in midwifery
service licensing. Starting in 2007, the Chinese NRP
expanded its program elements to add neonatal mor-
tality and morbidity evaluation. We believe the data
collected from this evaluation would be valuable, not
only to the Chinese NRP but also to the international
NRP.

ELECTRON MICROSCOPIC ANALYSIS OF
BACTERIAL BIOFILM ON TRACHEAL TUBES
REMOVED FROM INTUBATED NEONATES
AND THE RELATIONSHIP BETWEEN
BACTERIAL BIOFILM AND LOWER
RESPIRATORY INFECTIONS

Submitted by Jialin Yu
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INTRODUCTION: Recurrent neonatal lower respira-
try infections caused by endotracheal tubes (ETTs) may
be related to the bacterial biofilm on them.

OBJECTIVE: We aimed to investigate the microbial bio-
film on the surface of ETTs removed from neonates with
intubated ventilation to explore the relationship between
ETT biofilm and the lower respiratory infections.

METHODS: Twenty ETTs used in intubated neonates
who were examined for the presence of biofilm on their
surface by scanning electron microscopy, and bacteria
harvested from the surface of ETTs and the secretions of
lower respiratory tracts were isolated, identified, and
assessed for antimicrobial susceptibility.

RESULTS: Scanning electron microscopy showed that
the incidence of microbial colonization was 60% (12 of
20) when the use of tubes exceeded 2 days, biofilm
formation was observed ~3 days after intubation, and its
architecture became more mature and complex when
the duration exceeded 3 days. There were 14 positive
cultures from ETTs (70%, including 4 normal flora), in
which 7 kinds of pathogens were isolated; in 13 cultures
from the secretions of lower respiratory tract (65%, in-
cluding 1 normal flora), 10 kinds of pathogens were
isolated. Seven samples had the same pathogen both on
the surface of ETTs and in the secretions of the lower
respiratory tract, which accounted for 50 of the positive
cultures from ETTs. The Gram-negative bacteria isolated
from the surface of ETTs and the secretions of lower
respiratory tract presented multiresistance to antibiotics.

CONCLUSIONS: The ETT biofilm develops into a ma-
ture and complex form on the basis of the duration of
tube use. There is a possible positive correlation between
them. There is correlation between microbial biofilm
formation on the surface of ETTs and lower respiratory
tract infection in intubated neonates who are ventilated.
Nephrology

USING NONSTEROIDAL ANTINFLAMMATORY DRUGS IN VOLUME-DEPLETED CHILDREN CAN PRECIPITATE ACUTE RENAL FAILURE

Submitted by John Cheri Mathews
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Royal Liverpool Children’s Hospital, Liverpool, United Kingdom

INTRODUCTION: Nonsteroidal antiinflammatory drugs (NSAIDs) are ever increasing in popularity in hospital medicine and general practice and are readily available over-the-counter.

OBJECTIVE: Our goal was to illustrate the need to be aware of the effect of NSAIDs on dehydrated patients.

PATHOGENESIS: The risk of renal toxicity is increased in situations in which there is a stimulation of the renin-angiotensin system such as volume depletion. In these conditions, circulating vasoconstrictors are released, maintaining vascular resistance and blood pressure at the potential expense of regional organ blood flow. To maintain renal blood flow, counter-regulatory renal prostaglandins are released that counteract vasoconstrictors and normalize renal blood flow. NSAIDs blunt this counter-regulatory response and intensify the renal vasoconstriction, which leads to acute renal failure. In Table 1 we report 4 children with mild dehydration who developed acute renal failure after the use of therapeutic doses of NSAIDs in a children’s hospital.

TABLE 1. Acute Renal Failure in 4 Children After Use of NSAIDs

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>13</td>
<td>7</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Underlying pathology</td>
<td>Cranopharyngioma diabetic insipidus</td>
<td>Juvenile idiopathic arthritis, fasted for surgery</td>
<td>Juvenile idiopathic arthritis with sepsis</td>
<td>Relapse of Crohn disease</td>
</tr>
<tr>
<td>NSAID</td>
<td>Diclofenac sodium</td>
<td>Indomethacin diclofenac sodium</td>
<td>Diclofenac sodium</td>
<td>Diclofenac sodium</td>
</tr>
<tr>
<td>Highest creatinine level, mmol/L</td>
<td>10.7</td>
<td>12.9</td>
<td>10.7</td>
<td>12.2</td>
</tr>
<tr>
<td>Normalization, d</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>Permanent impairment</td>
</tr>
</tbody>
</table>

CONCLUSIONS: We recommend that NSAIDs should be avoided in children with actual or potential intravascular volume depletion. Although we have not proven cause and effect, additional research is needed to define the true risk of the potential renal complications of using NSAIDs in patients who are at risk of dehydration.

NOTE: The cases of the 4 children described in this report have been published elsewhere (John CM, Shukla R, Jones CA. Using NSAID in volume depleted children can precipitate acute renal failure. Arch Dis Child. 2007;92:524–526).

ROLES OF SCAP (STEROL REGULATORY ELEMENT–BINDING PROTEIN CLEAVAGE-ACTIVATING PROTEIN) IN THE MECHANISM FOR MESANGIAL FOAM-CELL FORMATION UNDER INFLAMMATORY STRESS

Submitted by Qiu Li
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INTRODUCTION: Our previous studies have demonstrated that lipid abnormalities play a significant role in glomerulosclerosis. Inflammatory cytokines promote lipid accumulation in human mesangial cells (HMCLs) by disrupting low-density lipoprotein receptor (LDLr) feedback regulation. The sterol regulatory element–binding protein (SREBP) cleavage-activating protein (SCAP) carries SREBP from endoplasmic reticulum (ER) to Golgi, where it is known to cleave SREBP, thereby enhancing LDLr gene expression and cholesterol uptake when cells need cholesterol.

OBJECTIVE: We aimed to investigate whether inflammatory mediators interfere with SCAP translocation and its biological consequence.

METHODS: HMCLs were used in all experiments. Total cellular RNA was isolated from these cells for detecting LDLr, SREBP-2, and SCAP messenger RNA levels with real-time quantitative polymerase chain reaction. LDLr protein expression was measured by Western blot. Translocation of the SCAP-SREBP complex from the ER to Golgi was investigated by confocal microscopy.

RESULTS: In the absence of exposure to interleukin 1β, a high concentration of LDL retained SCAP in the ER, a low LDLr promoter activity, messenger RNA synthesis, and protein expression were found, respectively. However, exposure to interleukin 1β caused overexpression of SCAP and enhanced its translocation from the ER to Golgi. This disrupted normal feedback regulation and resulted in inappropriately increased LDL uptake with transformation of HMCLs into foam cells. Overexpression of SCAP in HMCLs resulted in an increased translocation of SCAP from the ER to Golgi, and high concentrations of LDL were unable to suppress SREBP-2 and LDLr gene expression.

CONCLUSIONS: These data suggest that inflammatory mediators promote abnormal translocation of SCAP from the ER to Golgi and play an important role in lipid accumulation in HMCLs.
ELECTRON MICROSCOPIC ANALYSIS OF BACTERIAL BIOFILM ON TRACHEAL TUBES REMOVED FROM INTUBATED NEONATES AND THE RELATIONSHIP BETWEEN BACTERIAL BIOFILM AND LOWER RESPIRATORY INFECTIONS

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