Rotavirus vaccine: can this prevent hospital admission?

Tony Nelson
Competing Interests

Participated in vaccine clinical trials and disease surveillance studies funded by GlaxoSmithKline and Pfizer during past 3 yrs
Overview

• Rotavirus and its global disease burden
• Hong Kong disease burden
• Rotavirus vaccines
• Real world impact
• Safety & intussusception
• Cost-effectiveness
• WHO recommendations for use
• Hong Kong recommendations for use
What is rotavirus?
Rotavirus

“identified 1973”

Picture: PHIL Library, TEM image of RV particles, L.Palmer, ID 15194
Rotavirus strains

• Serotyping based on structural proteins VP7 & VP4:
  - 12 possible “G” (VP7) serotypes
  - 15 possible “P” (VP4) serotypes
  - 5 common: G1P[8], G2P[4], G3P[8], G4P[8], G9P[8]

• Strains vary:
  - By region
  - Over time
Clinical presentation of rotavirus

Subclinical - mild diarrhoea - frequent profuse diarrhoea with vomiting and fever - dehydration with shock, electrolyte imbalance - death

- Moderate fever (>39°C) in 30-40%
- Vomiting (1-2d)
- Diarrhoea (3-7d)
- Neurological (benign convulsions, encephalopathy and cerebellitis)

Rotavirus epidemiology

- Infects nearly all children by 3-5 Y of age
- BOTH in developed and developing countries
- Peak symptomatic disease 4-23 months

What is the global disease burden of rotavirus?
2008 global rotavirus disease burden
<5yrs of age

Risk
1 : 260
1 : 65
1 : 5
1 : 1

Events
453,000 deaths
~1.8 million inpatient visits
~24 million outpatient visits
~118 million episodes

Parashar et al. Emerging Infectious Diseases . 2003;9:570
What is Hong Kong's disease burden of rotavirus?
## Results of studies pre-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Duration (months)</th>
<th>Percent rotavirus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active Surveillance studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prince of Wales Hosp 1994-1995</td>
<td>12</td>
<td>388</td>
</tr>
<tr>
<td>Queen Mary Hosp 1982-1985</td>
<td>30</td>
<td>2228</td>
</tr>
<tr>
<td>Queen Mary Hosp 1983-1985</td>
<td>30</td>
<td>2246</td>
</tr>
<tr>
<td>Queen Mary Hosp 1983-1984</td>
<td>12</td>
<td>899</td>
</tr>
<tr>
<td><strong>Passive surveillance &amp; Laboratory data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prince of Wales Hosp 1987-1996</td>
<td>120</td>
<td>7945</td>
</tr>
<tr>
<td><strong>Community &amp; Laboratory studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kwun Tong Community 1984-1986</td>
<td>36</td>
<td>637</td>
</tr>
<tr>
<td>Prince of Wales Hosp 1984-1990</td>
<td>80</td>
<td>3267</td>
</tr>
<tr>
<td>Government Virus Lab 1987-1992</td>
<td>72</td>
<td>27618</td>
</tr>
</tbody>
</table>
Phase 1 2001–2003

✓ China
✓ Hong Kong
✓ Indonesia
✓ Malaysia
✓ Myanmar
✓ South Korea
✓ Taiwan
✓ Thailand
✓ Vietnam

Images courtesy of Joe Bresee
"Passive surveillance" incidence using CMS ICD codes

• July 1997 - June 1999 (n = 169,082)
• 12% had 1<sup>0</sup> diagnosis of diarrhoea
• 11% diarrhoea admission due to RV

Incidence of hospitalisation for RV
• 1.7-2.8 per 1000 children < 5yrs

Hong Kong’s ARSN data combined "Active" + "Passive" surveillance

- Active surveillance at 4 of 12 government hospitals [WHO generic protocol]
- This active surveillance linked with passive surveillance data (CMS) from all 12 government hospitals
- Denominator data = All Hong Kong births
Active surveillance

- Apr 2001-Mar 2003 (2 years)
- 7391 diarrhoea admissions
- 78% specimens tested for RV
- 30% of tested specimens RV+
- 24% diarrhoea admissions RV+
Seasonality
Dec 2000 - Mar 2003

RV+  RV−
Deaths

3 children died

1. Admitted and died same day with diagnosis of gastroenteritis. No stool.
2. Neuroblastoma ~ Diarrhoea 3 days after admission ~ Stool negative.
3. No clinical details
Linking “active” and “passive” surveillance data

CMS data for all general paediatric admissions < 5 yrs at:

- 4 active surveillance hospitals = 37,829
- 8 non-surveillance hospitals = 57,382
Under-reporting by CMS

<table>
<thead>
<tr>
<th></th>
<th>&quot;Any&quot; Diarrhoea</th>
<th>&quot;Any&quot; Rotavirus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CMS</strong></td>
<td>15%</td>
<td>2.0% (13%)</td>
</tr>
<tr>
<td>(Passive)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ARSN</strong></td>
<td>20%</td>
<td>4.6% (24%)</td>
</tr>
<tr>
<td>(Active)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RV disease burden

Incidence of hospitalisation for RV

- 8.8 per 1000 children < 5yrs
- 4x previous “passive” estimate

1 in 24 cumulative risk of hospitalisation for RV by age 5 years
CMS data over 14 rotavirus seasons (1 Jul 1997 - 31 Mar 2011)

Objectives

• To estimate disease burden & incidence of rotavirus in hospitalised Hong Kong children

• Use sentinel laboratory surveillance from one hospital (PWH) + passive discharge diagnosis (CMS data from all HA hospitals)

Methodology

1. CMS data from all HA hospitals

2. Calculate rotavirus hospitalization incidence rates by age group from CMS discharge diagnosis

3. Link laboratory data from PWH with CMS data

4. Calculate adjustment factors and adjust incidence rates

5. Determine significance of incidence trends

Adjustment Factors

- **AF 1**: adjust for potential under-reporting of rotavirus infection by the CMS system
  
  \[ AF 1 = \frac{\text{LAB rotavirus}^+}{\text{CMS rotavirus}^+} \]

- **AF 2**: reflect the potential under-estimate of a PWH laboratory diagnosis of rotavirus by accounting for the fact that not all admissions with a primary gastroenteritis-associated diagnosis had a stool specimen sent to the laboratory for testing
  
  \[ AF 2 = \frac{([\text{LAB rotavirus}^+] + \text{Primary gastroenteritis associated diagnosis & stool NOT sent} \ast \{\text{LAB rotavirus}^+ / \text{stool sent}\})}{\text{CMS rotavirus}^+} \]

- **AF 3**: the proportion of all admissions to PWH by age group that had a laboratory confirmed diagnosis of rotavirus
  
  \[ AF 3 = \frac{\text{LAB rotavirus}^+}{\text{total admissions by age group}} \]
Results

• Total 1,248,297 admissions

• Total number of admissions to all HA hospitals with any CMS rotavirus diagnosis highest during 1st year of life

Results: Rotavirus Hospitalization Incidence Rates

- **Lowest in first 2 months of life**
- **Peaked from 7 to 8 months**
- **Declined from ~18 to 24 months**
- **Adjusted incidence rates higher than unadjusted rates**

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Results: Incidence Rates Trend UP

- Incidence rates of rotavirus - both unadjusted CMS diagnosis and adjusted diagnosis - trended up over the 14 rotavirus seasons

- Trend for incidence of all-cause gastroenteritis based on primary CMS diagnosis alone was less marked than that seen for rotavirus
Results: Cumulative Risk of Admission [1 Apr 2000 - 31 Mar 2011] using linked PWH data

Estimates of cumulative risk of admissions by 5 years of age ranged from 1.4% [1 in 69] - 4.5% [1 in 22]

Conclusions

1. Incidence of rotavirus requiring hospital admission highest 6 - 24 months
2. Estimates of rotavirus disease burden can be derived from passive discharge data combined with sentinel laboratory data
3. Despite availability of rotavirus vaccine in Hong Kong private sector since 2006, an upward trend of incidence rate of both rotavirus GE & all-cause GE observed

1 in 33
Hong Kong children hospitalisation for rotavirus by 5 years of age
What is best way to prevent rotavirus?
Recognised that ...

Rotavirus vaccines are most effective way to prevent rotavirus diarrhoea since all children infected regardless of hygiene and sanitation conditions

Safety and Efficacy of an Attenuated Vaccine against Severe Rotavirus Gastroenteritis

Guillermo M. Ruiz-Palacios, M.D., Irene Pérez-Schael, M.Sc., Raúl Velázquez, M.D., Hector Abate, M.D., Thomas Breuer, M.D., SueAnn Costa Clemens, M.D., Brigitte Chevallot, Ph.D., Felix Espinosa, M.D., Paul Gillard, M.D., Bruce L. Innis, M.D., Yolanda Cervantes, M.D., Alexandre C. Lopes, M.D., Pio López, M.D., Mercedes Madrazo-Paño, M.D., Eduardo Ortega-Barría, M.D., Verena Richardson, M.D., Doris Maribel Rivero-Medina, M.D., Luis Rivera, M.D., Balen Salinas, M.D., Norda Pauls-Ruiz, M.D., Jorge Salmerón, M.D., Ricardo Rüttmann, M.D., Juan Carlos Tineo, M.D., Pilar Rubio, M.D., Ernesto Núñez, M.D., M. Lourdes Guerrero, M.D., Juan Pablo Yanzíbal, M.D., Silvia Damoso, M.Sc., Nadia Tornieporth, M.D., Xavier Sáez-Llorens, M.D., Rodrigo F. Vergara, M.D., Timo Vesikari, M.D., Alain Bouckenooghe, M.D., Ralf Clemens, M.D., Ph.D., Béatrice De Vos, M.D., and Miguel O’Ryan, M.D.,
for the Human Rotavirus Vaccine Study Group

Safety and Efficacy of a Pentavalent Human–Bovine (WC3) Reassortant Rotavirus Vaccine

Timo Vesikari, M.D., David O. Matson, M.D., Ph.D., Penelope Dennehy, M.D., Pierre Van Damme, M.D., Ph.D., Mathuram Santosham, M.D., M.P.H., Zoe Rodríguez, M.D., Michael J. Dallas, Ph.D., Joseph F. Heyse, Ph.D., Michelle G. Goveia, M.D., M.P.H., Steven B. Black, M.D., Henry R. Shinefield, M.D., Celia D.C. Christie, M.D., M.P.H., Samuli Yli-talo, M.D., Robbin F. Itzler, Ph.D., Michele L. Coia, B.A., Matthew T. Onorato, B.S., Ben A. Adeyi, M.P.H., Gary S. Marshall, M.D., Leif Gotheors, M.D., Dirk Campens, M.D., Aino Karvonen, M.D., James P. Watt, M.D., M.P.H., Katherine L. O’Brien, M.D., M.P.H., Mark J. DiNobile, M.D., H Fred Clark, D.V.M., Ph.D., John W. Boslego, M.D., Paul A. Offit, M.D., and Penny M. Heaton, M.D.,
for the Rotavirus Efficacy and Safety Trial (REST) Study Team
Attenuated human rotavirus vaccine, Rotarix™ (GSK; RV1)

- Monovalent
- 2 doses
- Grows well, low dose & high shedding

Rotarix Summary of Product Characteristics, 2013. Picture: GSK
Rotarix is a trademark of the GlaxoSmithKline group of companies
Human-bovine resortant rotavirus vaccine, Rotateq™ (Merck; RV5)

- Pentavalent
- 3 doses
- Grows poorly, high dose & low shedding

Rotateq Summary of Product Characteristics, 2013. Picture: Photos/Merck & Co., Inc. (RotaTeq), Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6304a4.htm?s_cid=mm6304a4_x

Rotateq is a trademark of Merck
How efficacious are rotavirus vaccines?
## Efficacy against severe RVGE by mortality quartile

<table>
<thead>
<tr>
<th>WHO strata</th>
<th>Mortality Quartile</th>
<th>Efficacy</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1(^{st})</td>
<td>50–64%</td>
<td>Ghana, Kenya, Malawi, Mali</td>
</tr>
<tr>
<td>Middle</td>
<td>2(^{nd})</td>
<td>46–72%</td>
<td>Bangladesh, South Africa</td>
</tr>
<tr>
<td></td>
<td>3(^{rd})</td>
<td>72–85%</td>
<td>Vietnam, other countries in the Americas</td>
</tr>
<tr>
<td>Low</td>
<td>4(^{th})</td>
<td>85–100%</td>
<td>Countries in the Americas, Europe, Western Pacific</td>
</tr>
</tbody>
</table>

**RVGE, rotavirus gastroenteritis**
Rotavirus vaccine efficacy in Hong Kong children up to three years of age

- A phase III, double-blind, randomized, controlled trial to evaluate efficacy, safety and immunogenicity of a human rotavirus vaccine, RIX4414 (Rotarix™) against severe rotavirus gastroenteritis in children up to 3 years of age

Methods

• Healthy infants aged 6–12 weeks enrolled (8 Dec 2003 and 31 Aug 2005)
• 2 oral doses of either RIX4414 vaccine (N = 1513) or placebo (N = 1512) given 2 mo apart
• Vaccine efficacy assessed from 2 weeks post-Dose 2 until 2 & 3 yrs of age
• Anti-rotavirus IgA seroconversion rate assessed in 100 infants
• Safety assessed to 2 years of age ~ Serious adverse events recorded throughout study
Results

• Vaccine efficacy against severe rotavirus gastroenteritis:
  - 95.6% (95% CI: 73.1%-99.9%) @ 2yrs
  - 96.1% (95% CI: 76.5%-99.9%) @ 3yrs

• Seroconversion rate 1-2 months after second dose of RIX4414:
  - 97.5% (95% CI: 86.8%-99.9%)

How effective are rotavirus vaccines in the real world?
### Yearly reduction of admissions in children <5y in some early adopter countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Rotavirus (All-cause GE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>66-86% (29-50%)</td>
</tr>
<tr>
<td>Australia</td>
<td>87% (29-50%)</td>
</tr>
<tr>
<td>Belgium</td>
<td>50-77% (33% 0-2 year-olds)</td>
</tr>
<tr>
<td>Austria</td>
<td>74-79% (17-48%)</td>
</tr>
<tr>
<td>Brazil</td>
<td>59% (17-48%)</td>
</tr>
<tr>
<td>Mexico</td>
<td>40% (17-48%)</td>
</tr>
<tr>
<td>Panama</td>
<td>37% (17-48%)</td>
</tr>
<tr>
<td>El Salvador</td>
<td>28-37% (17-55%)</td>
</tr>
</tbody>
</table>

**Rotavirus admissions ↓ 49-89%**

**All cause-GE admissions ↓ 17-55%**
Reduction in diarrhoea-related mortality by age in Mexico

- Reduction sustained for 4 full years post-vaccine introduction
- Compared with baseline, diarrhoea mortality fell by up to 55%
- Approximately 1,000 deaths averted per year (mainly <2 years)
Nosocomial infection & indirect protection

Universal rotavirus vaccination

- may reduce nosocomial infections

- may provide indirect protection to unvaccinated older children and adults

Unanticipated benefits of rotavirus vaccination in the United States

Reduction of rotavirus-related seizures and adult gastroenteritis hospitalizations

Two recent studies in the United States demonstrate unanticipated additional benefits from immunization against rotavirus, the leading cause of severe and fatal diarrhea in children younger than five years of age. The first study reveals that rotavirus vaccination may decrease the risk of rotavirus-related seizures in young children who have been vaccinated, and the second confirms that rotavirus vaccination of infants reduces gastroenteritis hospitalizations among older children and adults who have never been vaccinated as a result of herd immunity. These findings complement the already well-documented benefits of rotavirus vaccination in reducing diarrhea-related hospitalizations and emergency room visits among young children.

Rotavirus vaccines may reduce rotavirus-related seizures by 20% potentially saving US$7 million in health care costs

In a study published today in *Clinical Infectious Diseases* entitled “Protective association between...”

Available from: [http://sites.path.org/rotavirusvaccine](http://sites.path.org/rotavirusvaccine) [Accessed January 2014]
What is the risk of instussusception with rotavirus vaccines?
# Intussusception

- **US (Rotashield™)** 1 : 10,000
- **Australia (RV1, RV5)** 1 : 18,000
- **US (RV1, RV5)** 1-5 : 100,000
- **Mexico (RV1)** 1 : 51,000
- **Brazil (RV1)** 1 : 68,000

Benefits of rotavirus vaccination vs risks of intussusception

<table>
<thead>
<tr>
<th>Country</th>
<th>Hospitalizations (deaths) prevented</th>
<th>Excess intussusception events (deaths)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico¹</td>
<td>11,600 (663)</td>
<td>41 (2)</td>
</tr>
<tr>
<td>Brazil¹</td>
<td>69,600 (640)</td>
<td>55 (3)</td>
</tr>
<tr>
<td>Australia²</td>
<td>7,000 (NR)</td>
<td>6 (NR)</td>
</tr>
<tr>
<td>US³</td>
<td>53,400 (14)</td>
<td>45 (0.2)</td>
</tr>
</tbody>
</table>


NR, not reported

Slide courtesy of Prof. M Santosham
ACIP review of intussusception risk-benefit in 2013

• Benefits of RV5 and RV1 outweigh the small excess risk of intussusception

• Parents & providers need to be aware of the small risk of intussusception, the signs and symptoms of intussusception, and the need for prompt care if these develop

Are rotavirus vaccines cost effective?
Review of rotavirus vaccine cost-effectiveness

• 68 economic evaluations reviewed
• Cost-effective in developing countries
• Variable in developed countries but many studies likely cost effective if:
  - lower prices
  - inclusion of herd protection
  - adoption of a societal perspective

Narrow benefits used in economic evaluations

1. **Reduced diarrheal morbidity and mortality:**
   Episodes and mortality of diarrheal disease; measured as DALYs, QALYs, or the monetized value

2. **Averted medical costs from diarrhea:**
   Reduced costs associated with inpatient, outpatient and informal medical care

3. **Direct non-medical costs:**
   Non-medical out of pocket costs to households such as travel including disrupted travel

4. **Indirect or productivity costs:**
   Lost time from work for caregivers or patients

Broader Benefits of vaccination

1. **Herd immunity:**
   Indirect protection of non-vaccinated individuals due to reduced force of infection

2. **Non-diarrheal health benefits:**
   Benefits from improved nutrition, reduced co-infection, or long-term health improvements (e.g., cardiovascular, chronic GI, rheumatologic)

3. **Adaptive and averting costs:**
   Costs to household, healthcare facilities and public health system to avoid infections which could be avoided with vaccination

4. **Long-term averted medical costs:**
   Medical costs associated with chronic health conditions resulting from diarrhea

5. **Long-term productivity:**
   Costs associated with reduced cognitive function due to diarrhea and/or associated malnutrition

6. **Demographic adaptive response:**
   Reduced child mortality is expected to result in reduced fertility; increased per capita investment in health and education

7. **Macro-economic effects from impoverishment:**
   Reduced macroeconomic costs associated with impoverishment due to repeated high medical treatment costs

8. **Distributional or equity effects:**
   Value or willingness to pay for benefits that equally or disproportionately benefit the poor

9. **Risk premium or utility in anticipation:**
   Value of safety or piece of mind associated with reduced risk of illness. This separate from the expected value of health or economic outcomes.

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Are rotavirus vaccines cost-effective in Hong Kong?
Aim

To perform a (narrow) economic analysis of government funded universal rotavirus vaccination in Hong Kong from the government’s perspective

Methods

• A Markov model of costs and effects (disability averted) associated with universal vaccination was compared with no vaccination.

• In both strategies, newborns were studied until 5 years of age or until they died, using cost, probability and utility data from the literature.

Results and conclusions

• Based on 2002 demographic, cost and morbidity data and reasonable uncertainty estimates of these variables, a universal rotavirus vaccination programme paid for by the Hong Kong Government is cost neutral at vaccine cost of US$40-92 a per course.

What does WHO advise about use of rotavirus vaccines?
Rotavirus vaccines
WHO position paper - January 2013

• Rotavirus vaccines should be included in all NIPs and considered a priority, particularly in countries with high RVGE-associated fatality rates, such as in south and south-eastern Asia and sub-Saharan Africa
How many countries have followed WHO advice?
National RV introductions by WHO region: 77 countries*

*As of April 1, 2015
**Not a WHO member state
RV = rotavirus vaccine
P-Noy, Ona lead launching of rotavirus vaccination for infants

By Aurea Calica and Sheila Crisostomo (The Philippine Star) Updated July 03, 2012 12:00 AM Comments (0)

Manila, Philippines - President Aquino and Health Secretary Enrique Ona led yesterday the launching of the rotavirus vaccination for infants and the “Z benefits” of the Philippine Health Insurance Corp. covering catastrophic illnesses like cancer and leukemia.

The launch of the rotavirus vaccination makes the Philippines the first country in Southeast Asia to include the life-saving vaccine against diarrhea in the government’s immunization program.

Rotavirus vaccination is for infant beneficiaries aged one-and-a-half months to three-and-a-half months belonging to families listed in the National Housing Targeting System for Poverty Reduction.

Aquino said an estimated 700,000 infants from the poorest communities in the country with the highest morbidity and mortality rates from diarrheal diseases will be vaccinated this year.

"The overall health of Filipinos remains our top priority," he said.

The vaccine would ensure that the health and well-being of Filipino children are safeguarded, he added.

Ona said the Department of Health is committed to reduce infant and child mortality by improving access to adequate child health care services, particularly for the poorest of the poor.

"The introduction of rotavirus vaccination is a step towards attaining our Millennium Development Goal of lowering infant and child mortality," he said.

Rotavirus is the most common cause of diarrhea in infants and children as this infects the bowels, according to the World Health Organization.

The virus results in deaths of about 600,000 children and over two million hospitalizations worldwide annually.

Recurrence of infections with different viral strains is possible, and practically all children have had rotavirus infection by the time they are five years of age.

The Z Benefits of PhilHealth will pay P100,000 for breast cancer, P210,000 for standard risk childhood acute lymphocytic leukemia and P100,000 for prostate cancer.

What does Hong Kong advise about use of rotavirus vaccines?
Scientific Committee on Vaccine Preventable Diseases

Vaccination offers the best hope for protecting population health against challenges posed by infectious diseases, through strengthening of the human defense systems. The Scientific Committee on Vaccine Preventable Diseases is set up to provide science-based advice on vaccine use at the population level.

**Chairman**
Dr. CHOW Chun Bong, B.B.S, JP

**Members**
Dr. CHAN Man Chung, JP
Dr. Daniel CHIU Cheung Shing
Dr. Yonnie LAM Chau Kuen
Prof. LAU Yu Lung
Dr. LEUNG Chi Wai
Dr. LEUNG Ting Fan
Dr. Janice LO Yee Chi, JP
Dr. MAK Sin Ping, B.B.S
Dr. TAM Cheuk Ming, JP
Dr. Owen TSANG Tak Yin
Prof. Patrick WOO Chiu Yat
Dr. Betty YOUNG Wan Yin
Papers Discussed / Recommendations

- Updated Recommendations on the Use of Pneumococcal Vaccines for High-risk Individuals (December 2014)
- Recommendations on Seasonal Influenza Vaccination for the 2014/15 Season (July 2014)
- Interim Recommendations on Seasonal Influenza Vaccination for the 2014/15 Season (April 2014)
- Recommendations on Seasonal Influenza Vaccination for the 2013/14 Season (July 2013)
- Recommendations on Seasonal Influenza Vaccination for the 2012/13 Season (Updated in May 2013)
- Recommendation on the Use of Human Papillomavirus (HPV) Vaccine (March 2013)
- Recommendations on the Use of Varicella (Chickenpox) Vaccine in Childhood Immunisation Programme (February 2013)
- Scientific Committee on Vaccine Preventable Diseases and Scientific Committee on Vector-borne Diseases Updated Recommendation on Japanese Encephalitis Vaccination for Travellers to Endemic Areas (July 2011)
- Recommendations on Seasonal Influenza Vaccination for the 2011/12 Season (June 2011)
- Recommendations on the Use of 13-valent Pneumococcal Conjugate Vaccine in Childhood Immunisation Programme (April 2011)
- Recommendations on Seasonal Influenza Vaccination for the 2010/11 Season (August 2010)
- Recommendations on the Interchangeability between 7-valent Pneumococcal Conjugate Vaccine (PCV7) and 10-valent Pneumococcal Conjugate Vaccine (PCV10) (August 2010)
- Recommendations on Human Swine Influenza (HSI) Vaccination (January 2010)
- Recommendations on Seasonal Influenza Vaccination for the 2009/10 Season (July 2009)
- Recommendations on the Use of Pneumococcal Vaccines (March 2009)
- Use of Hepta-valent Pneumococcal Conjugate Vaccine in the Childhood Immunisation Programme (October 2008)
- Recommendations on Influenza Vaccination for the 2008/09 Season (June 2008)
- Statements on Influenza Vaccination for the 2007/08 Season (May 2007)
- Recommendations on updated childhood immunisation programme containing inactivated poliovirus and acellular pertussis vaccine (December 2006)
- Hepatitis A immunisation in high risk groups and outbreak situations (July 2006)
- Statements on Influenza Vaccination for the 2006/07 Season (April 2006)
- Statement from the Working Group on Influenza Vaccination (December 2005)
- Statements on Influenza Vaccination for the 2005/06 Season(August 2005)
- Recommendation for use and advice for travellers on use of Meningococcal vaccines (June 2005)
- Statements on Influenza Vaccination for the 2004/05 Season(September 2004)
Vaccines Not Included in the Hong Kong Childhood Immunisation Programme
Rotavirus is one of the most common causes of diarrhoea among children worldwide. It is transmitted mainly by the faecal-oral route. Transmission can occur through ingestion of contaminated water or food and contact with contaminated surfaces. The disease is characterised by vomiting and watery diarrhea, often with fever and abdominal pain. It is a self-limiting illness for healthy persons, but occasionally associated with severe dehydration in young children. Observation of good personal, food and environmental hygiene is an effective method for preventing rotavirus infection. Effective vaccines are now available to prevent severe rotavirus diseases. Parents should consult doctors before getting their children immunised.
Search Results

Results 1 for rotavirus vaccine (0.02 seconds)

Hospital Authority Convention Programme at a Glance

... Pneumococcal Vaccine in Children: Current Situation Rotavirus Vaccine: Can This Prevent Hospital Admission? Elimination of Viral ...

Take-home message 1

• All children are infected with rotavirus in the first 3–5 years of life, regardless of hygiene & sanitation conditions

• In Hong Kong 1 in 33 children are hospitalised with rotavirus by age 5 yrs

Take-home message 2

• Vaccines are most effective way to prevent rotavirus diarrhoea
Take-home message 3

• Rotavirus vaccines have performed well in countries where they are used routinely; in some settings, they have conferred additional benefits to unvaccinated children & adults through herd protection

Take-home message 4

• The documented health benefits of rotavirus vaccines far outweigh the small risk of intussusception that has been seen in some settings

Take-home message 5

• WHO recommends that rotavirus vaccines should be included in all National Immunisation Programmes
Some thoughts …

- Universal RV vaccine impacts *negatively* on Department of Health’s budget
- Universal RV vaccine impacts *positively* on Hospital Authority’s budget

“Universal RV vaccine = more cost/work for DH but less cost/work for HA”
Also an equity issue ...

- Rich Hong Kong children are getting rotavirus vaccine through the private sector
- Poor Hong Kong children are being admitted to HA hospitals with rotavirus disease
... a recommendation for HA policy-makers

Since universal RV vaccine at the likely tender price will be **cost-saving** to Hong Kong government & since it will benefit all Hong Kong children

“HA should encourage Dept of Health to incorporate rotavirus vaccine into the Childhood Immunisation Programme”
Thank you