EPI-NEWS

NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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DANISH HEALTH RESEARCH IN GUINEA-BISSAU

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In one of the world's poorest countries, Guinea-Bissau in West Africa, the Bandim Health Project (BHP) has been engaged in epidemiological research since 1978 focussing on infection, vaccination and the long-term effects of health intervention.
The BHP is a collaboration between Statens Serum Institut and the Guinea-Bissau Ministry of Health.
Child mortality in Guinea-Bissau ranks among the highest worldwide: > 200 per 1000 live born infants during the first three years of life. Neonatal complications, acute and chronic diarrhoea, pneumonia, and malaria are the most common causes of death.
Less than half the adult population is literate. Barring medical and law school, further education has not been available in Guinea-Bissau until recently.

The registration system – basis for longitudinal population studies
The project backbone is the continuous full registration of pregnancies, births, deaths, and migration within the study area, which is situated on the outskirts of the capital, Bissau, and has a population of 85,000 persons. All infants are assigned a numerical identifier, and all houses in the study area have been numbered. Children up to the age of 3 years are visited at least every three months to monitor nutritional status, vaccinations, breast-feeding status, infections, hospital admissions, socio-economic parameters, migration, and deaths. All hospital admissions of children from the study area are registered at Bissau's only paediatric ward. Furthermore, a cohort including 25,000 women of childbearing age and their children from Guinea-Bissau's rural areas are monitored. Approximately 150 supervisors, field workers, laboratory assistants, nurses, physicians, drivers and office staff are employed by the BHP.

Guinea-Bissau research training
Funding from DANIDA's ENRECA programme has allowed the BHP to initiate research training for Guinean academics, primarily physicians. Consequently, the first ever female PhD from Guinea-Bissau was obtained by a BHP scholar; also 11 master's degrees have been completed, and another five PhDs are currently underway.
Furthermore, during the last 20 years, the BHP has been the focus of 22 PhD theses, mainly Danish, and nine doctoral dissertations.

Research focus areas
Two-dose measles vaccination strategy:
Infection with measles before the WHO recommended vaccination age at 9 months is a growing problem in the developing countries. This is due, among others, to increasing urbanisation and an increase in the share of mothers who were themselves measles vaccinated at a young age and who consequently transfer fewer antibodies to their children.
The BHP has carried out large-scale studies to investigate the effects of an early two-dose strategy in which the initial measles vaccination is given before 9 months of age. An ongoing study in which the initial dose is given at 4½ months and the second at 9 months points to almost total prevention against measles infection and measles mortality compared with children who have the vaccination at 9 months of age. Furthermore, long-term follow-up shows that two doses provide good long-term protection.
Non-specific effects of vaccines:
Routine vaccinations may have non-specific effects. For instance, measles vaccination reduces child mortality beyond what may be explained by the prophylactic effect against measles. This effect is more distinct in young females. The causes of the non-specific effects of vaccines and any interaction with vitamin A supplements are investigated in ongoing immunological studies.
BHP study results concerning the non-specific results of vaccines, including any negative effects following DTP vaccination, are controversial. A recent review of the results performed by an independent international group of researchers concluded that the methodological standards of the research are high. It was recommended to host an international conference in early 2007 to encourage other groups to initiate corresponding studies in other countries to test the findings.
Protection after rotavirus infection**:**
Rotavirus is the primary cause of child diarrhoea, and 75% of all children in Guinea-Bissau are infected with rotavirus before the age of two. Rotavirus disease is associated with a mortality of 3.4 per 1000 children < 1 year in Guinea-Bissau. Natural rotavirus infection yields 70% protection against rotavirus diarrhoea, and 52% protection against reinfection during the first year following the initial infection. This high protection rate suggests that a rotavirus vaccine would be an effective means to reduce the incidence of acute diarrhoea with dehydration and associated deaths.
For further information on the BHP, please contact project secretary Christina Rasmussen, crn@ssi.dk.
(P. Valentiner-Branth, K. Mølbak, Dept. of Epidemiology, P. Aaby, Bandim Health Project, Division of Epidemiology)

NEW ROTAVIRUS VACCINES
Two new vaccines against rotavirus infection have been licensed in Denmark. One of these (Rotarix®) contains a live, attenuated human rotavirus strain G1P[8]. The vaccine is administered orally and given as two doses at 2 and 4 months of age. The SSI stocks a limited amount of the vaccine.
The other vaccine (RotaTeq®) contains five live, attenuated human-bovine reassortants, G1, G2, G3, G4 and P1[8]. This vaccine is also administered orally and given as three doses at 2, 4 and 6 months of age. The vaccine is expected to be available by the end of 2006. Both vaccines provide good protection against moderate and severe rotavirus diarrhoea.
The Danish National Board of Health has not published any recommendations regarding the use of these vaccines in Denmark. Vaccination may be considered for infants < 6 months whose family is to be stationed in countries with poor hospital standards.
Worldwide the rotavirus infection causes 25 million medical consultations, 2 million hospital admissions and 440,000 deaths annually, primarily among children in developing countries. In the industrialised world, rotavirus is also the most common cause of child diarrhoea. In Denmark approx. 1000 children under the age of 5 years are admitted with rotavirus annually. Mortality is very low, probably < 1 death annually, while the socio-economic costs derived from the treatment of sick children and the parents' absence from work are estimated to be substantial.
(P. H. Andersen, Department of Epidemiology)

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Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2006 figures are preliminary)

Table 1	Week 33 2006	Cum. 2006 [1]	Cum. 2005 [1]
AIDS	1	28	38
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	0	15	2
Diphtheria	0	0	0
Foodborne diseases	19	319	308
of these, infected abroad	0	74	70
Gonorrhoea	7	276	337
Haemorrhagic fever	0	0	0
Hepatitis A	2	15	43
of these, infected abroad	0	4	11
Hepatitis B (acute)	0	12	24
Hepatitis B (chronic)	4	227	91
Hepatitis C (acute)	0	6	1
Hepatitis C (chronic)	2	354	207
HIV	7	136	175
Legionella pneumonia	3	72	64
of these, infected abroad	0	20	22
Leprosy	0	0	0
Leptospirosis	1	5	10
Measles	0	27	2
Meningococcal disease	0	43	70
of these, group B	0	22	35
of these, group C	0	6	16
of these, unspec. + other	0	15	18
Mumps	0	10	5
Neuroborreliosis	1	27	39
Ornithosis	0	8	13
Pertussis (children < 2 years)	0	32	102
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	1	1
Listeria monocytogenes	0	4	1
Streptococcus pneumoniae	0	46	85
Other aethiology	0	2	12
Unknown aethiology	0	7	12
Under registration	1	48	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	3	35	70
of these, infected abroad	1	28	59
Syphilis	0	46	81
Tetanus	0	2	2
Tuberculosis	10	265	276
Typhoid/paratyphoid fever	0	16	21
of these, infected abroad	0	16	19
Typhus exanthematicus	0	0	0
VTEC/HUS	9	86	101
of these, infected abroad	1	23	37

[1] *Cumulative number 2006 and in corresponding period 2005*

Selected laboratory diagnosed infections

Number of specimens, isolates, and/or notifications received in SSI laboratories

Table 2	Week 33 2006	Cum. 2006 [2]	Cum. 2005 [2]
Bordetella pertussis (all ages)	2	134	344
Gonococci	12	283	290
of these, females	3	52	30
of these, males	9	231	260
Listeria monocytogenes	2	28	18
Mycoplasma pneumoniae			
Resp. specimens [3]	4	273	648
Serum specimens [4]	5	239	536
Streptococci [5]			
Group A streptococci	11	107	80
Group B streptococci	4	62	51
Group C streptococci	0	15	15
Group G streptococci	10	95	76
S. pneumoniae	3	691	774
Table 3	**Week 31 2006**	**Cum. 2006 [2]**	**Cum. 2005 [2]**
Pathogenic int. bacteria [6]			
Campylobacter	118	1478	2012
S. Enteritidis	29	270	333
S. Typhimurium	15	211	287
Other zoon. salmonella	13	346	312
Yersinia enterocolitica	2	108	142
Verocytotoxin-producing E. coli	8	78	87
Enteropathogenic E. coli	7	133	146
Enterotoxigenic E. coli	18	142	197

[2] *Cumulative number 2006 and in corresponding period 2005*

[3] *Resp. specimens with positive PCR*

[4] *Serum specimens with pos. complement fixation test*

[5] *Isolated in blood or spinal fluid*

[6] *See also www.germ.dk*

Creutzfelt-Jakob Disease - Comment to table 1

The high number of cumulated CJD cases received in 2006 compared with 2005 is due to a validation of the CJD monitoring performed using an extract from the Danish Hospital Discharge Register. After a reminder, several notifications have been received covering the period from 1997 onwards. The number only includes four cases diagnosed in 2006, which is within expectations.

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