

3. Hygienetag Köln

Hygiene im Kinderklinikum: Kinder – Eltern – Geschwister – Klinikpersonal

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Hygiene im Kinderklinikum: Kinder – Eltern – Geschwister – Klinikpersonal

- 1. Hintergrund**
- 2. Herausforderungen in der Prävention**
- 3. Strategien**
- 4. Zusammenfassung**

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Definition of Family-centered Care

"Family-centered care is grounded in mutually beneficial partnerships among health care providers, patients, and families...

.... recognizes vital role that families play in ensuring the health and well being of infants, children, and adolescents

...acknowledges that emotional, social, and developmental supports are integral components of health care

...shapes policies, programs, facility design, and staff interactions..."

***Family-Centered Care** is based on the belief that a partnership between health care providers and families is the best way to meet the needs of children*

Family-centered Care

Families have become the “natural” partner in hospital care for neonates, infants and children

This close partnership starts at hospital admission and usually ends with discharge

The support of family members in hospital child care is more than their mere presence – parents/caregivers take over the responsibility for many duties in daily practice

Family-centered Care

However:

The presence of family members in the hospital is also a challenge:

- Overcrowded emergency rooms and bed rooms
- Insufficient facilities (sinks, showers, toilets) for family members
- Close distance between ill children, siblings and caregivers
- Maintaining isolation precautions
- Children playing with each other

→ **Many institutions were not intended for rooming-in parents**

→ **Children's hospitals sometimes look like "small facilities" for "small people"**

Family-centered Care



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Infection control challenges

- Rooming-in
- Visit of siblings
- Kangaroo care for neonates
- Co-bedding for multi-gestational siblings in the NICU
- Isolation precaution measures

Tuberculosis

From 1992 to 1998, chest radiographs were obtained from adult caretakers accompanying 59 consecutive children admitted to Texas Children's Hospital with suspected TB

Of the 105 screened adults, 16 (15%) had previously undetected pulmonary TB

Tuberculosis

Reference	Case age TB diagnosis	Initial diagnosis	Probable source case	TST conversions			
				Pediatric patients n/N (%)	Visitors n/N (%)	HCW n/N (%)	Total n/N (%)
George et al. (1986) ²	3 years Spinal abscess	Spinal tumor	Mother (AFB+)	10/195* (5.1)	0/181 (0)	0/149 (0)	10/525 (1.9)
V-Karanfil et al. (1988) ³	5 years Pulmonary	AIDS, LIP, cavitary TB	Patient	NA	NA	2/28 (7.1)	2/28 (7.1)
Rabalais et al. (1991) ⁴	14 months Pulmonary	Failure to thrive, fever lymphadenopathy	Father (AFB NA) Patient	NA	NA	3 ⁺ /50 (6)	3/50 (6)
Rabalais et al. (1991) ⁴	5 months Pulmonary	Pneumonia, fever, weight loss	Patient	NA	NA	1/28 (3.6)	1/28 (3.6)
Costello et al. (1993) ⁵	25 days Congenital	Respiratory distress, vomiting, poor feeding	Patient (intubated)	NA	NA	1/86 (1.2)	1/86 (1.2)
Weinstein et al. (1995) ⁶	2 years Pulmonary	Chelation therapy	Father (AFB+)	1/2 (50)	1/5 (20)	0/16 (0)	2/23 (8.7)
Lee et al. (1998) ⁷	65 days Congenital	Prematurity 25 week gestational age	Father (AFB-), Mother (AFB NA) Patient (intubated)	0/14 (0)	4 ⁺ /27 (15)	2/260 (0.7)	6/301 (1.9)
Matlow et al. (2000) ⁸	8 months Peritoneal	Peritonitis	Patient (peritoneal fluid culture positive for TB)	NA	NA	2/111 (1.8)	2/111 (1.8)
This report et al. (2003)	2 months Pulmonary	Respiratory distress, laryngotracheo- malacia	Mother (AFB+)	1/15 (6.7)	NA	4/211 (1.9)	5/226 (2.2)

Tuberculosis

Children with pulmonary tuberculosis, particularly those younger than 10 years, are less capable than adults of transmitting *M. tuberculosis*:

- usually no cavitary lesions or extensive infiltrates
- most young children are unable to forcefully expectorate
- smaller amounts of bacilli in the secretions

→ **Children usually do not transmit TB**

→ **But the parents or grand-parents may!**

Respiratory viruses

RSV in infants admitted to the hospital and in their families

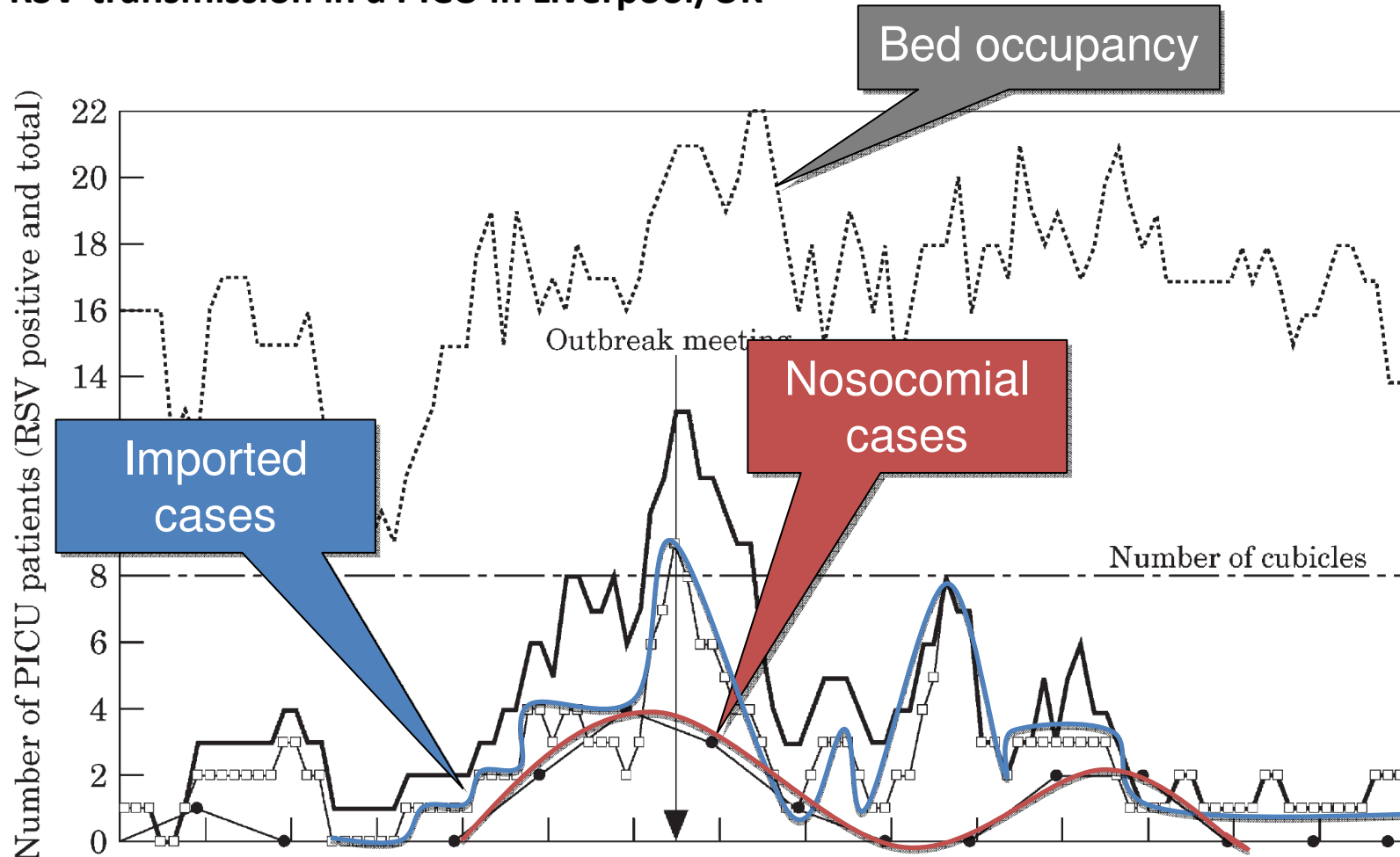
Infants < 5 months of age in 5 London paediatric intensive care units

Respiratory syncytial virus was detected in 54% of the siblings and 34% of caregivers

Silent RSV infection occurred frequently amongst children and adults

→ **Potential risk of RSV-transmission by family-members**

RSV-transmission in a PICU in Liverpool/UK



“The ‘contaminating factors’ for the spread of in-house RSV from patients in cubicles were most probably medical staff or visitors”

Respiratory viruses

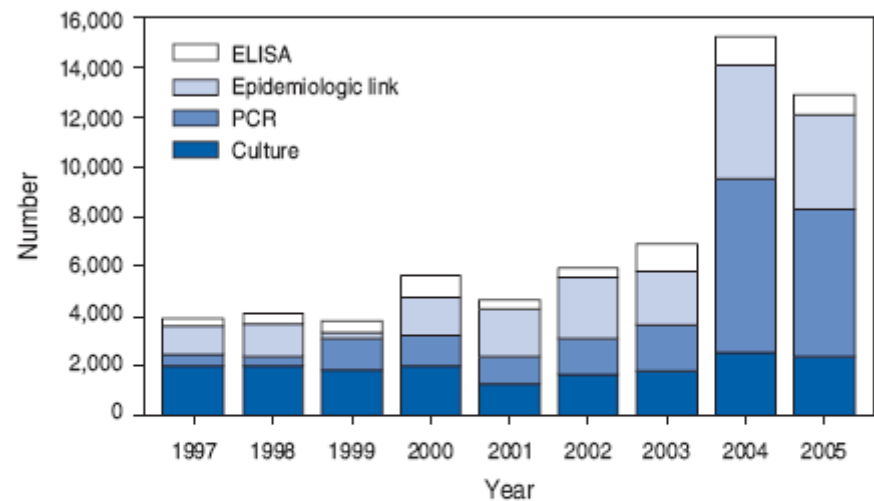
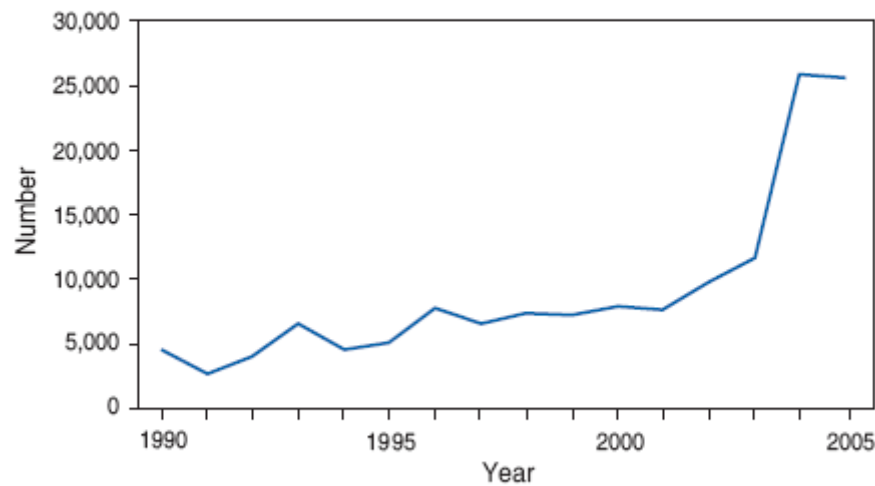
The prevalence of respiratory viruses is high in asymptomatic children (27%) and particularly in infants (44%) by PCR-testing

Virus	Cases* (141)	Controls (157)
Influenza A	4 (3 %)	2 (1 %)
Influenza B	2 (1 %)	2 (1 %)
Adenovirus	5 (4 %)	1 (1 %)
Respiratory syncytial virus	30 (21 %)	2 (1 %)
Rhinovirus	22 (16 %)	20 (14 %)
Human Metapneumovirus	7 (5 %)	0 (0 %)
Human Coronavirus	3 (2 %)	8 (5 %)

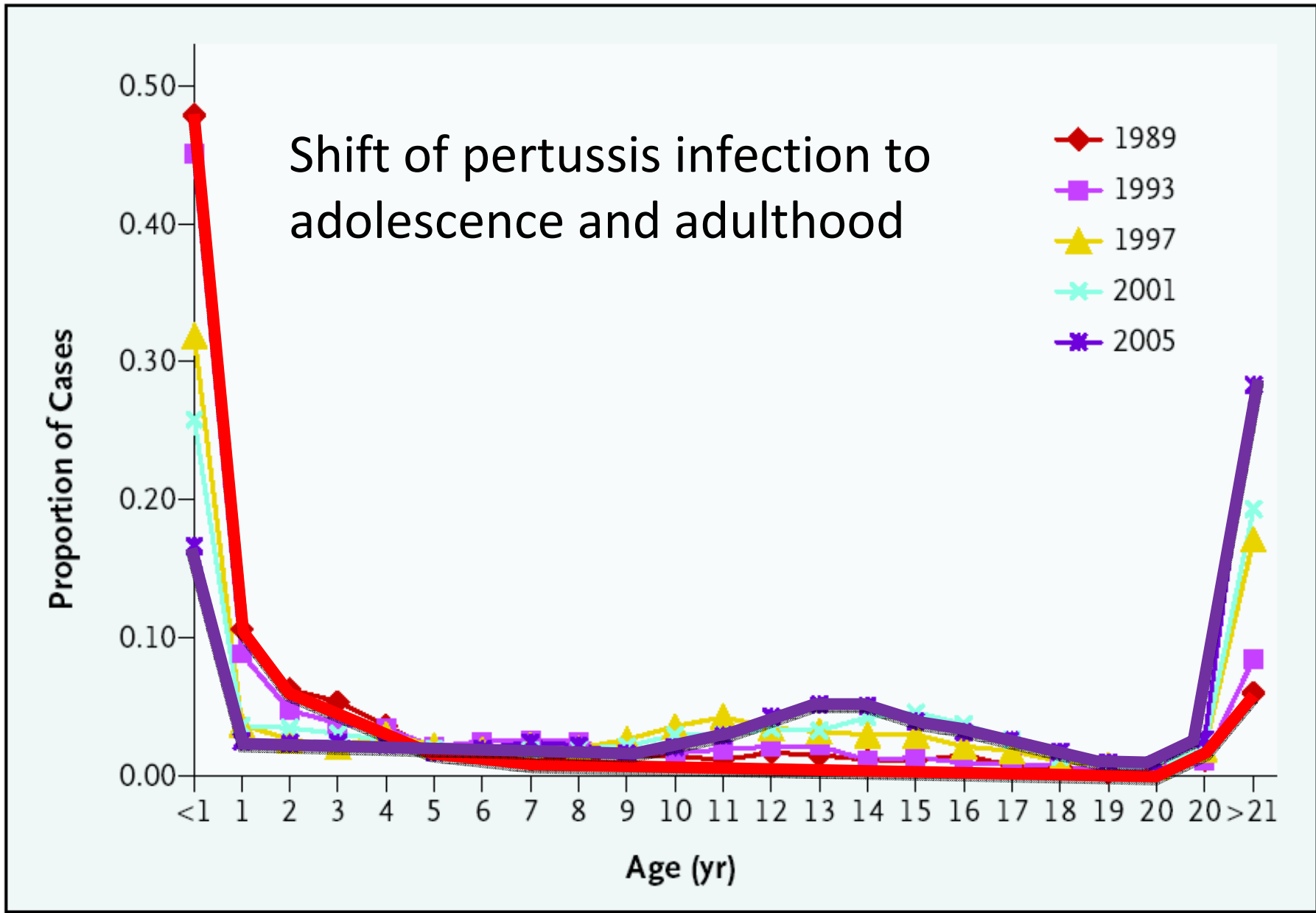
*Cases were children up to 6 years admitted with clinical suspicion of acute respiratory infection. Controls were children of the same who visited an outpatient clinic for nonrespiratory disease in the same period.

Pertussis

Reported Pertussis cases in the US



- Detection bias (PCR)
- Waning of vaccine-induced immunity
- Lack of natural boosting



Pertussis

- Up to 30% prolonged cough in adults and adolescents are due to *B. pertussis*
- Underreporting: Illness 40-160 x more frequent than reported
- 4-22 x more asymptomatic than symptomatic

Relationship	PICU	Ward	Total
Parents	10/11	2/3	12/14
Siblings	0/6	2/3	2/9
Baby or co-primary	6/8	2/2	8/10
Total	16/25	6/8	22/33

91% of adult contacts and 97% of child contacts of PICU infants with microbiologically confirmed pertussis reported having been vaccinated for pertussis in the past

Gilberg S. *J Infect Dis* 2002

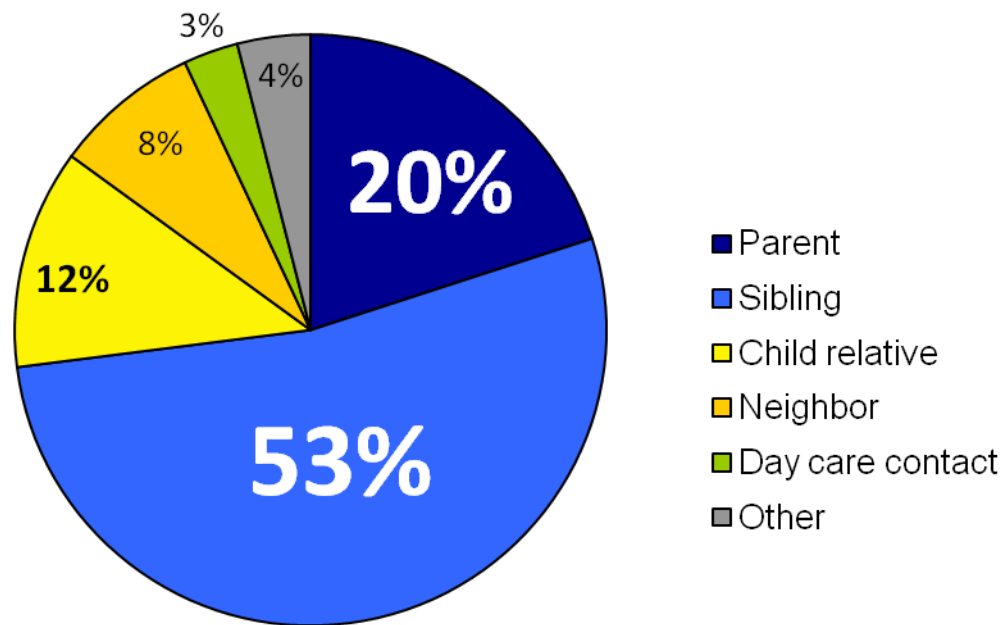
Crowcroft NS. *Arch Dis Child* 2003

Mattoo S, Cherry JD. *Clin Microbiol Rev* 2005

Cherry JD. *Ped Infect Dis J* 2006

Heininger U. *Clin Infect Dis* 2004

Pertussis



Pertussis

Recommendations for pertussis vaccination in Switzerland:

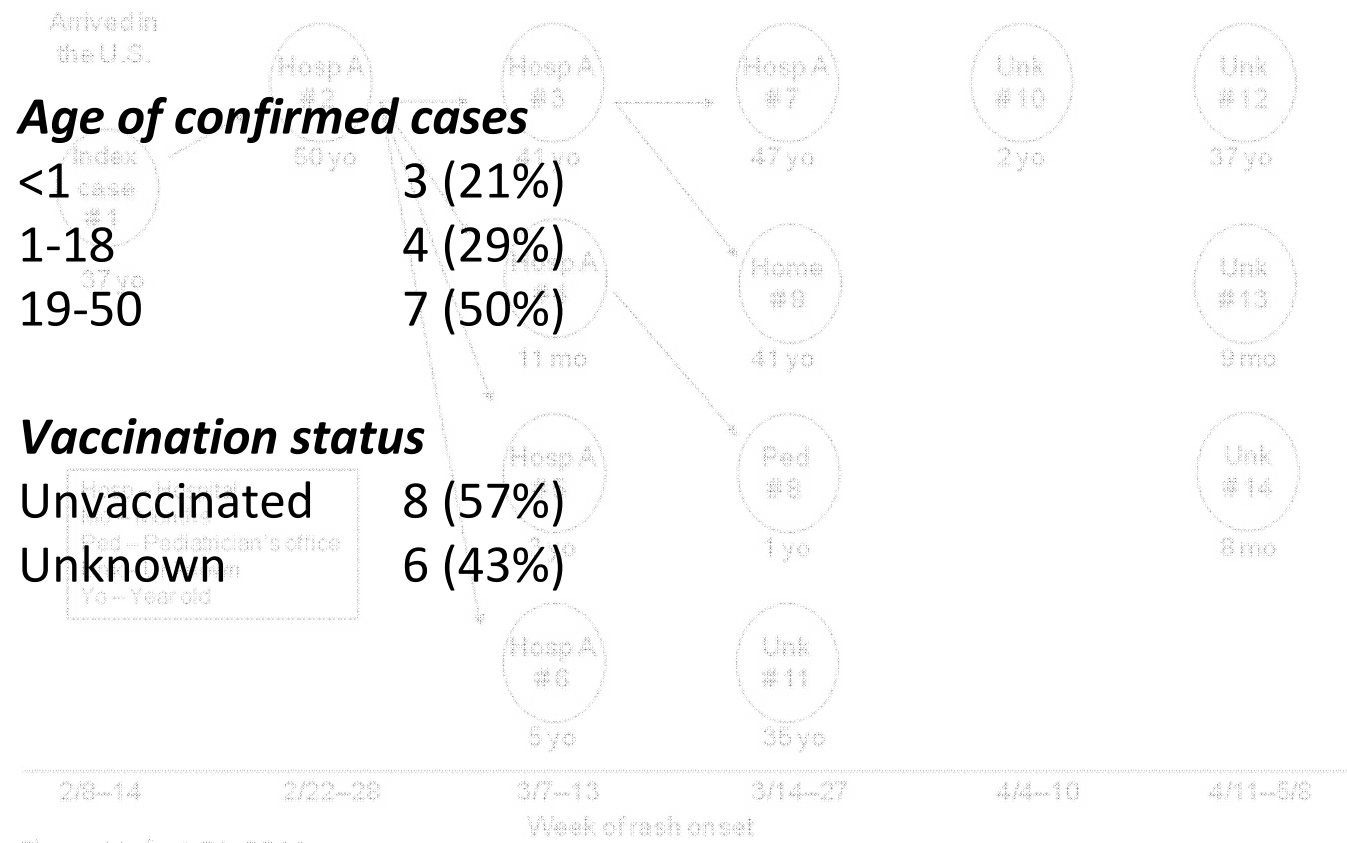
- Infants from 2 months (3 doses)
- Children between 15 and 24 months
- Children between 4 and 7 years
- Adolescents between 11 and 16 years (if <5 doses)
- Adults between 25 and 29 years

Some hospitals vaccinate healthcare workers in vulnerable units

Measles

Swiss measles “exported” to Arizona

Index case: a 37-old unvaccinated Swiss traveler



How long do bacteria persist on inanimate surfaces?

Systematic review

Bacteria	Duration of persistence
<i>Bordetella pertussis</i>	3 - 5 days
<i>Escherichia coli</i>	1.5 hours – 16 months
<i>Haemophilus influenzae</i>	12 days
<i>Klebsiella spp.</i>	2 hours – 30 months
<i>Pseudomonas aeruginosa</i>	6 hours – 16 months
<i>Staphylococcus aureus</i>	7 days – 7 months
<i>Streptococcus pneumoniae</i>	1 – 20 days

Kramer A. *BMC Infect Dis* 2006;6:130

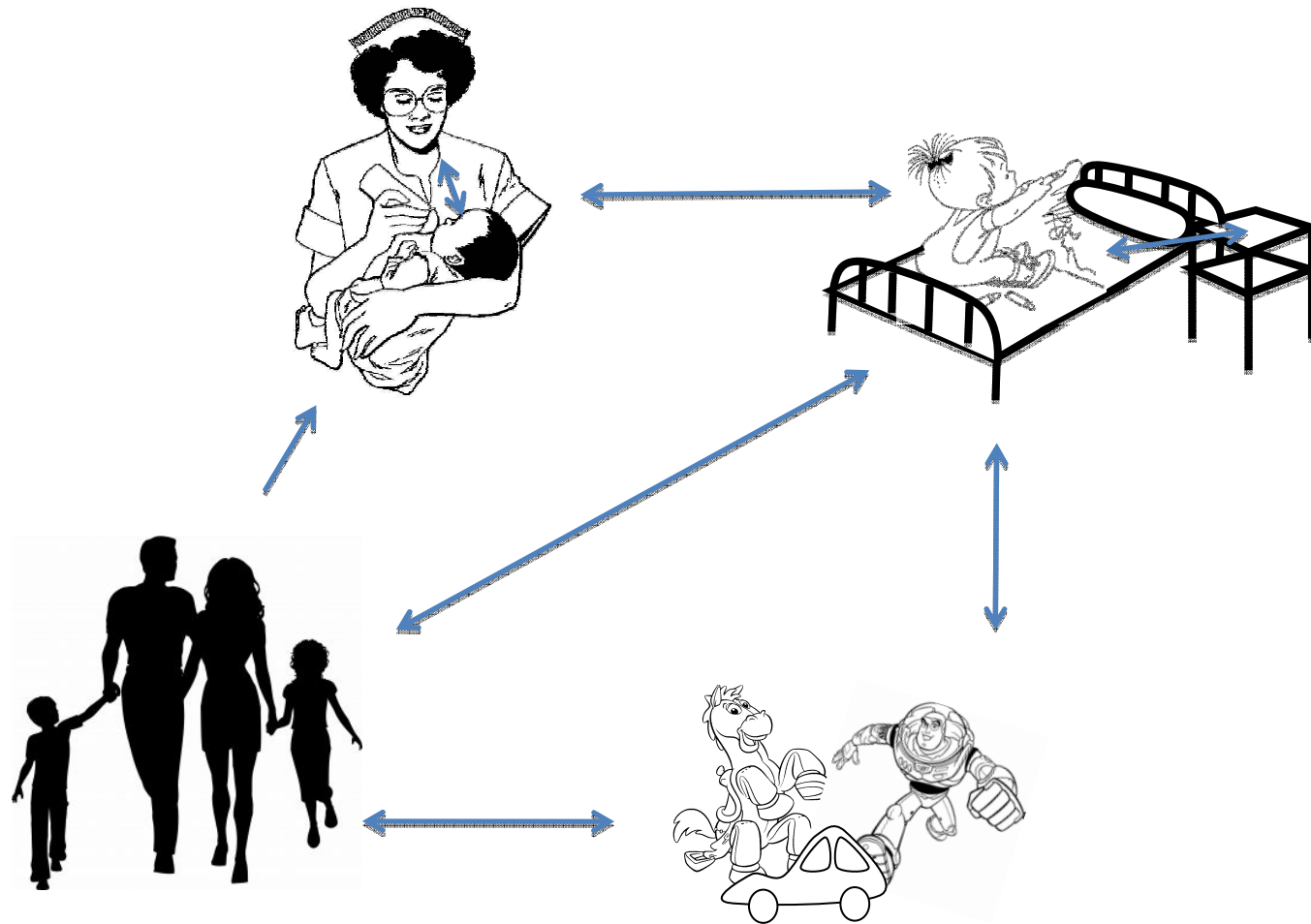
How long do viruses persist on inanimate surfaces?

Systematic review

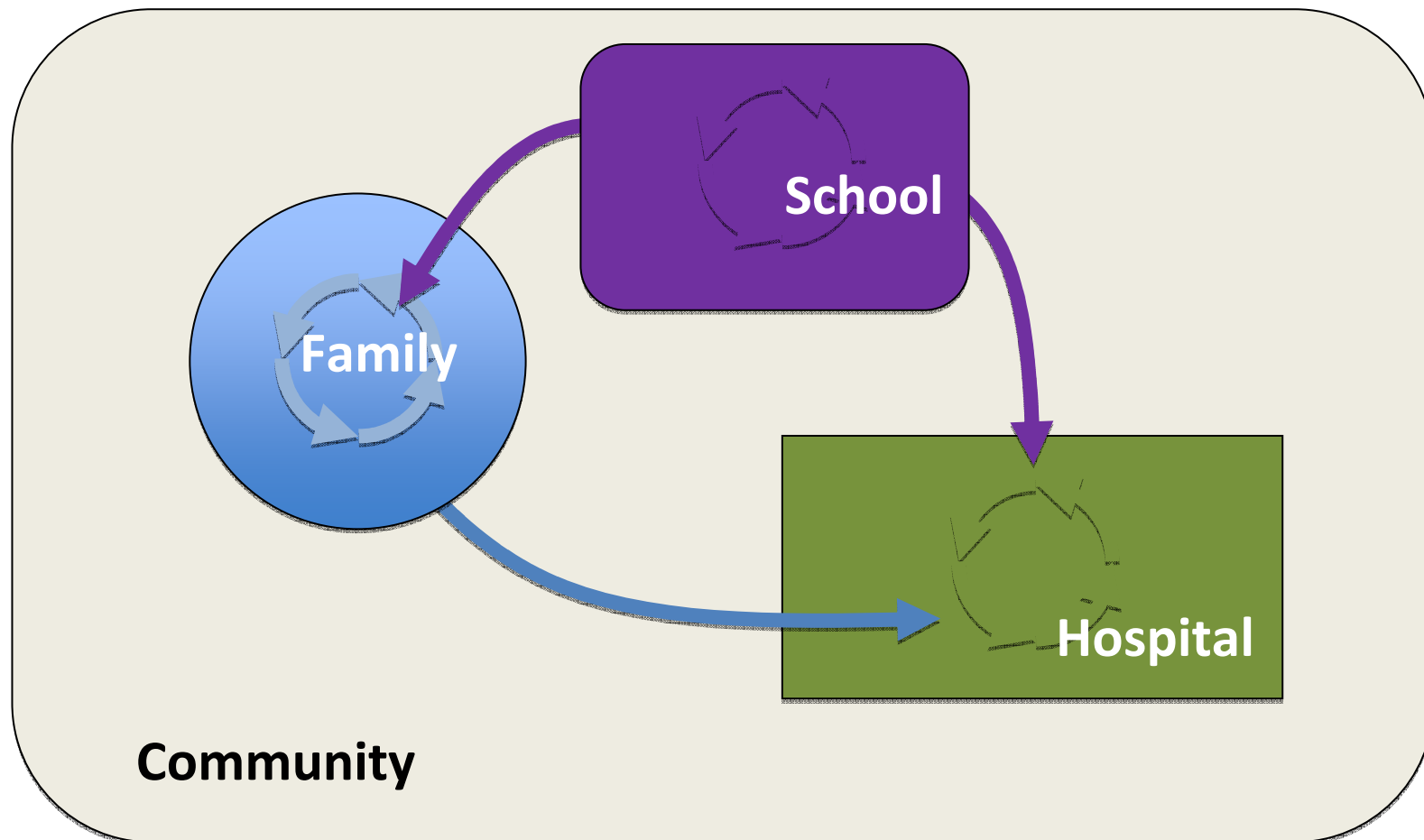
Viruses	Duration of persistence
Adenovirus	7 days – 3 months
Coronavirus	3 hours
Coxsackievirus	> 2 weeks
Influenzavirus	1 – 2 days
Norovirus	8 hours – 7 days
Respiratory syncytial virus	Up to 6 hours
Rotavirus	6 – 60 days

Kramer A. *BMC Infect Dis* 2006;6:130

Transmission



Visitors as source of pathogens



Little “communities” in the children’s hospital



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Recommendations for family visits

Front-line staff must be vigilant about noticing visitors with potential communicable diseases

Recommendations for family visits

- Allow visitors to only visit their sibling/family member
- Provide education: hand hygiene and transmission precautions
- Engage families in infection prevention efforts
 - Hand hygiene
 - Cough etiquette
 - Compliance with isolation precaution measures

Recommendations for family visits

Exclude visitors:

- with fever or symptoms of respiratory tract illness, GI tract illness or skin lesions/dermatitis, especially during **respiratory viral season**
- recently **exposed** to communicable disease (usually siblings)
- children who have not had all their **immunizations** for age

Visit of siblings

- “...strongly encouraged”
- “...maximize opportunities for visiting and minimize risks of nosocomial spread of pathogens...”
- “...before visit, healthcare professional should interview the parents outside the unit to assess the health of sibling visitors...”
 - Document interview in chart
 - Approval for visit
- *Challenges of implementation*

Selected exclusion of visits by siblings

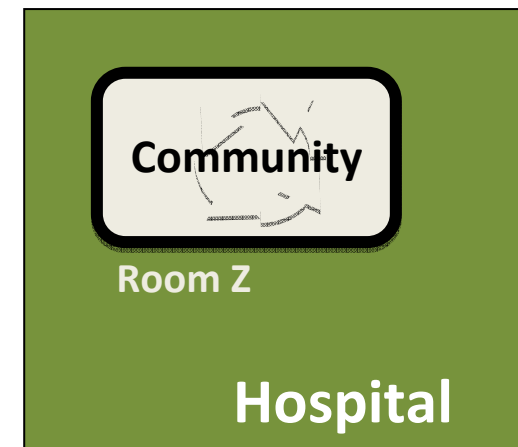
- No siblings in playrooms
- Limit sibling visits in high risk areas, e.g. NICUs, PICUs, HSCT/oncology units
- Limit siblings during RSV season or influenza season
- Track epidemiology of seasonally viruses
 - In case of healthcare-associated infection, review potential role of siblings

Visitor guidelines for children on transmission precautions

- **Visitors may have same community exposure as patient**
- **Visitors only visit one patient**
- **Rooming in parents**
 - Not feasible to wear personal protective equipment (PPE) continually
 - Wearing PPE by parents may traumatize child
 - PPE must be applied outside the room
 - No visits to the cafeteria
 - Rooming in is especially helpful in such situations as the child may not be able to play with other children on the ward

Visitor guidelines for children on transmission precautions

- Emphasize hand hygiene
- Contact Precautions
 - ***Not required to wear gowns & gloves***
- Droplet Precautions
 - **Not required to don a mask**
- Airborne Precautions
 - Don an N95
- Varicella Precautions
 - Must be immune or had vaccine
- Perform audits and monitor healthcare-associated infections to be confident policies are safe



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Visitors are a potential source of pathogens

- Tuberculosis
- RSV
- Pertussis*
- Measles*
- Influenza*
- Varicella*
- Noroviruses
- Rotavirus*

* Vaccine preventable

Visitor screening for family visits

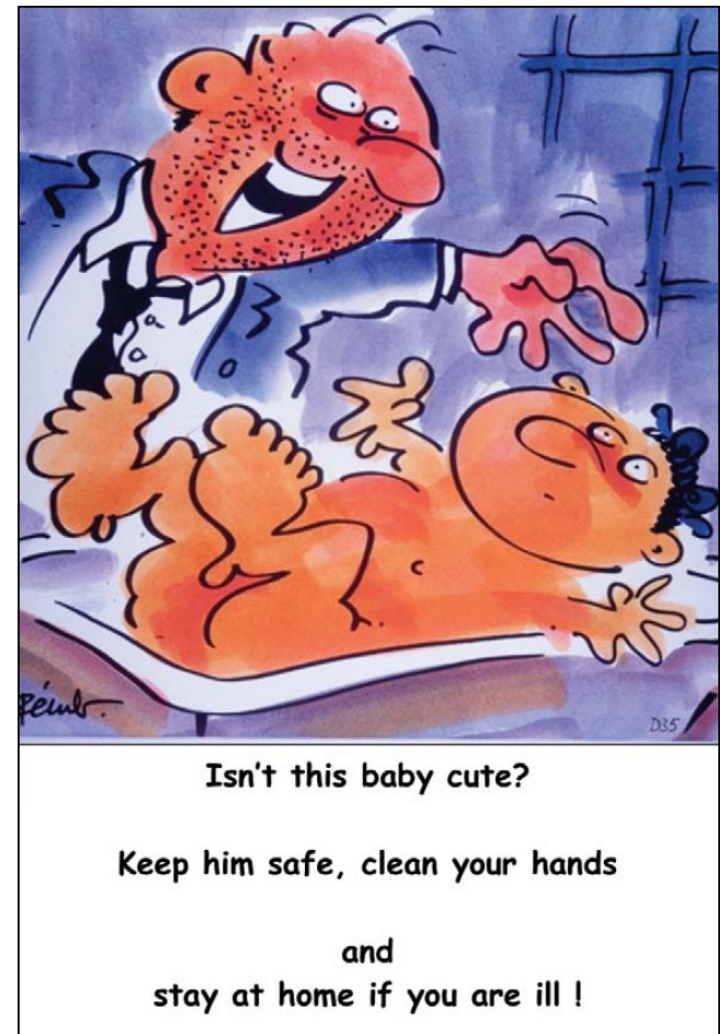
Visitor screening policies for family visits **differ between hospitals** to take into account **cultural habits** and the eventual role of the visitor as care-provider

In many developing countries, **children would be poorly cared** for if the family or close relatives were not available to help the severely understaffed health-care workers in the routine nursing

Therefore, screening is often associated with **education of the visitor** to ensure that he or she does not transmit pathogens to his or her child or to other children in the hospital

In most countries, it is currently recommended to **promote visitors' self-assessment** of risk and education via leaflets, posters, and health-care workers.

Posfay-Barbe. *Lancet Infect Dis* 2008;8:19



Summary

We are used to blame the nurse in case a healthcare-associated infection occurs...

...it was the
"Butler"!



Summary

- In child care we should not always blame the usual suspect: the healthcare worker
- Sometimes we need to look for the “Butler”

...and the “butler” may be the family* or even the child we care for!

*Murder on the Orient Express!

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Vielen Dank

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