



# Utilization of an electronic immunization registry in Iceland

- pitfalls and opportunities -

Thorolfur Gudnason MD, PhD  
Chief of National Vaccination Program

24.4.2014



# Immunization registry - Iceland

- Vaccination schedule in Iceland - 2014

Age	Vaccination
3 months	<u>DTaP-IPV-Hib, PCV (10-valent)</u>
5 months	<u>DTaP-IPV-Hib, PCV (10-valent)</u>
6 months	MCC
8 months	MCC
12 months	<u>DTaP-IPV-Hib, PCV (10-valent)</u>
18 months	MMR
4 years	dtap
12 years	<u>MMR, HPV-2 three doses</u>
14 years	dtap-IPV





# Immunization registry - Iceland

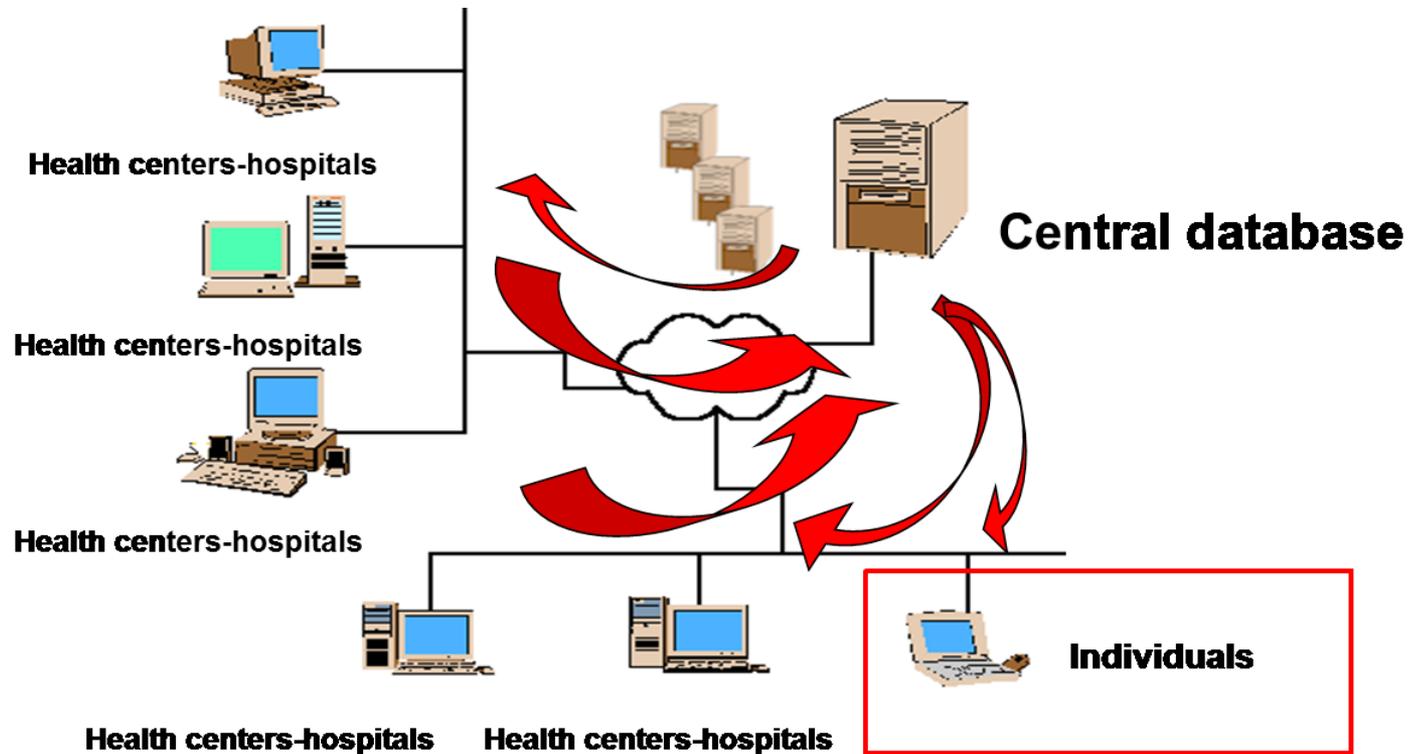
---

- Before 2007
  - No central registry
  - Registered at the site of vaccination
  - Vaccinations difficult to confirm retrospectively
  - Coverage (estimates)
    - Surveys
    - Sales figures
    - “Educated guess” !!
  - Electronic registration at health centers since 2002



# Immunization registry - Iceland

- Since 2007
- Electronic real time interactive central database





# Immunization registry - Iceland

---

- Central Immunization registry
  - All childhood vaccinations in Iceland since 2002
  - Other vaccinations (travellers, adults, influenza etc.)
  - Personal identifiers
  - Date of vaccination
  - Place of vaccination
  - Name of vaccine
  - ATC or HL7 codes of vaccines
  - Refusal of vaccination





# Immunization registry - Iceland

---

- Utilization
  - Coverage
    - Total population, regions, sub-regions, nationalities.
  - Timing of vaccination
    - Ages, intervals
  - Individuals not adequately vaccinated
    - Lists provided to health centers
  - Evaluation of programs at different sites
  - Online individual information on vaccination





# Immunization registry - Iceland

---

- Coverage
  - Clear definition needed
  - By birth cohorts, age, vaccination numbers?
- Calculation of vaccine coverage in Iceland
  - By birth cohorts
  - Numerator
    - Total number of children living in the country by birth years who are fully or partially vaccinated.
  - Denominator
    - Total number of children by birth years currently living in the country.





# Immunization registry - Iceland

---

- Potential utilization
  - Link to disease registries
    - Estimate efficacy
    - Estimate adverse effects
  - Estimation of possible disease outbreaks
  - Target un-/ partially vaccinated groups
  - Facilitates reminder/recall to parents
  - Evaluation of vaccine batches
  - Controlling the cost of vaccination program





# Immunization registry - Iceland

---

- Pitfalls
  - Legal obligations vs. individual privacy issues
  - Technical problems
    - Variety of immunization registries
    - Electronic transfer of data
    - Quality control necessary
  - Human problems
    - Information entry
    - Quality control necessary
  - Cost



# Immunization registry - Iceland

- Coverage Report 2014- Examples
  - DTP-POLIO-HIB

Birth cohort yr.	Schedule	Number vaccinated	Birth cohort number	Coverage %	Mean age
2012	3 m	4433	4555	97,3	3,3 m
2012	5 m	4363	4555	95,8	5,5 m
2012	12 m	3924	4555	86,1	12,6 m
<b>DTP</b>					
2008	4 y	3902	3916	82,5	4,4 y
<b>DTP-IPV</b>					
	14 y	3979	4324	92,2	14,8 y



# Immunization registry - Iceland

- Coverage Report 2014- Examples
  - Conj. Pneumococcal vaccine (Synflorix)

Birth cohort yr.	Schedule	Number vaccinated	Birth cohort number	Coverage %	Mean age
2012	3 m	4420	4555	97,0	3,3 m
2012	5 m	4353	4555	95,6	5,5 m
2012	12 m	3882	4555	85,2	12,6 m



# Immunization registry - Iceland

- Coverage Report 2014- Examples
  - MMR

Birth cohort yr.	Schedule	Number vaccinated	Birth cohort number	Coverage %	Mean age
2011	18 m	3999	4502	88,4	19,4 m
1999	12 y	4002	4250	94,2	12,5 y



# Immunization registry - Iceland

- Coverage Report 2014- Examples
  - HPV (Cervarix)

Birth cohort yr.	Schedule	Number vaccinated	Birth cohort number	Coverage %	Mean age
1999	12 y	2031	2154	94,3	12,5 y
	12 y + 1 m	2010	2154	93,3	12,6 y
	12 y + 6 m	1977	2154	91,8	13,0 y





# Immunization registry - Iceland

---

- Summary
  - Since 2007
  - Electronic real time interactive central database
  - All childhood vaccinations since 2002
  - Great administrative and scientific tool
  - Accurate coverage
  - Good evaluation of programs
  - Various utilization potentials
  - Low coverage at certain ages

