

SAPIENS

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Studies on *S. pneumoniae* in Russia

- Unified surveillance system of pneumococcal infection is lacking
- Regional sentinel centers were established
 - 2010 – St. Petersburg – prospective. Research institute of Children’s Infections (RICI)
 - Acute otitis media (AOM)
 - Meningitis, invasive pneumonia
 - Carriage
 - 2010 – Moscow – prospective. Scientific Center for Children’s Health (SCCH)
 - AOM
 - Carriage
 - 2010 – Moscow – prospective. Reference Center for meningococcal infections (RCMI)
 - Meningitis
 - 2010 – Smolensk – retrospective. Smolensk Medical Academy (SMA)
 - Different diagnosis

Streptococcus pneumoniae
serotype distribution in
children in the Russian
Federation before the
introduction of
pneumococcal conjugate
vaccines into the National
Immunization Program

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Common features

- Lack of surveillance systems
- Problems of micro labs
 - During current year only 3 invasive isolates were recovered in St. Petersburg

SAPIENS

- **S**CIENTIFIC
- **A**SSESSMENT OF
- **P**NEUMOCOCCAL
- **I**NFECTION
- **E**PIDEMIOLOGY
- **N**ETWORKS

Participating countries

Russia

- general population \approx 143 mln
- birth cohort \approx 1.8 mln
- PCV13 - December 2014 – February 2015

Kazakhstan

- general population \approx 18 mln
- birth cohort \approx 0.350 mln
- PCV13 NIP started since 2010 with gradual inclusion of the regions

Bulgaria

- population \approx 6.5 mln
- birth cohort \approx 0.06 mln
- PCV10 started since 2011

Study groups

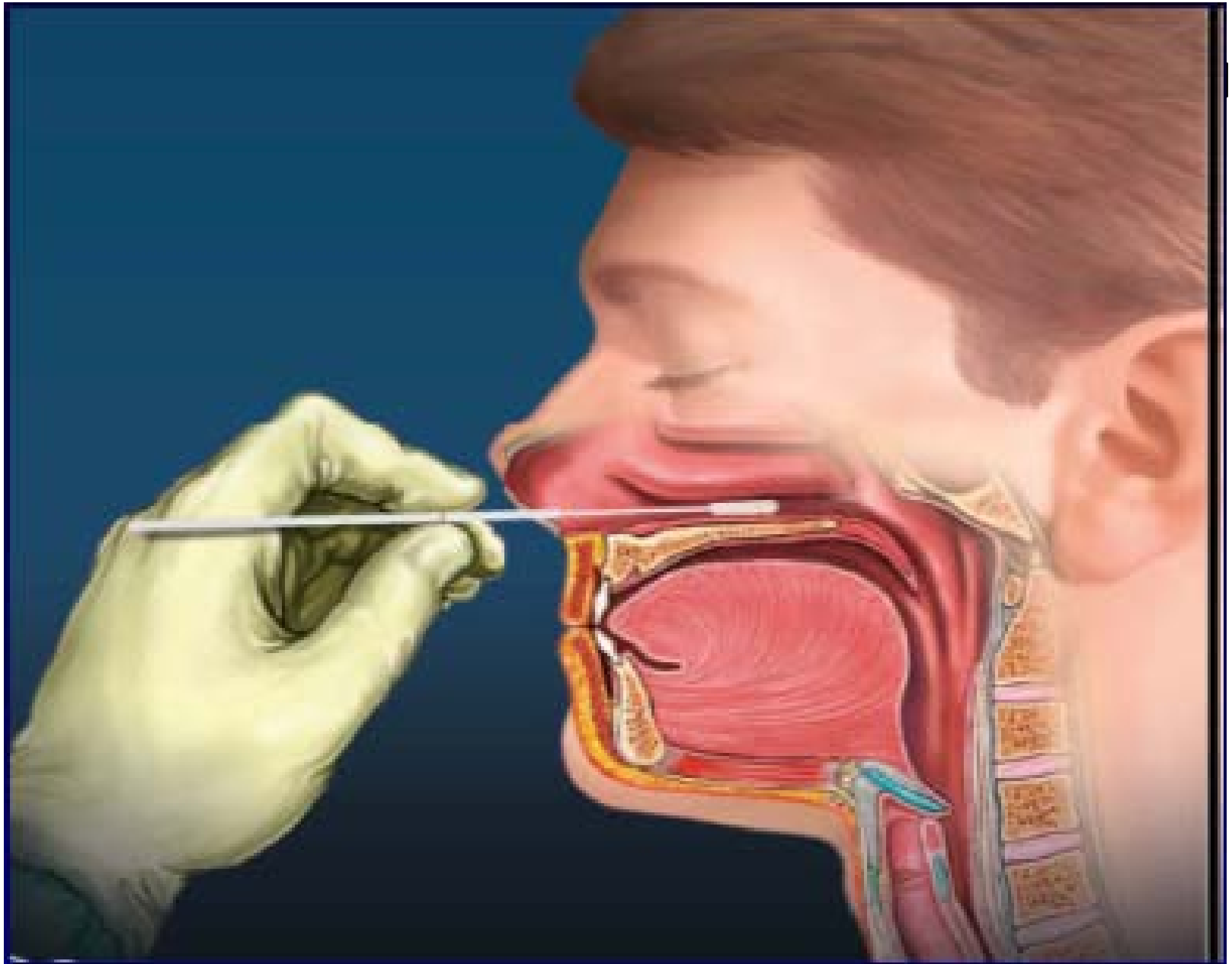
- Healthy, 'non-organized' visiting a healthcare institution for regular prophylactic examinations and planned vaccination;
- Healthy 'organized' children attending kindergartens and/or daycare centers;
- Children brought to a pediatric hospital's emergency room with the signs of an acute respiratory infection;
- Children hospitalized with community-acquired pneumonia with its x-ray confirmation;
- Children diagnosed with acute otitis media requiring tympanocentesis;
- Adults diagnosed with community-acquired pneumonia with its x-ray confirmation;
- Patients of all ages diagnosed with purulent meningitis

Primary objectives

- *S. pneumoniae* serotype in
 - NPC of healthy children aged ≤ 5 y.o. in Russia, Kazakhstan and Bulgaria.
 - NPC of healthy children 3-5 y.o. in organized communities (kindergartens) in Russia
 - NPC of children with ARVI aged ≤ 5 y.o. in Russia, Kazakhstan and Bulgaria.
 - Children 0-5 y.o. with AOM in Russia and Kazakhstan.
 - Children and adults with CAP in Russia and Kazakhstan.
 - Children and adults with meningitis in Russia, Kazakhstan and Bulgaria.

SECONDARY OBJECTIVES

- Determine antimicrobial susceptibility patterns of *S. pneumoniae* collected in Russia, Kazakhstan and Bulgaria.
- Retrospective and prospective epidemiological analysis of CAP, AOM and meningitis incidence rates in Russia and Kazakhstan.
- Spn serotype distribution in vaccinated and non-vaccinated children (prospective for the same age groups and historical data comparison)
- Development of the SOP for microbiological and PCR laboratories for pneumococcal disease etiological diagnosis





Парацентез



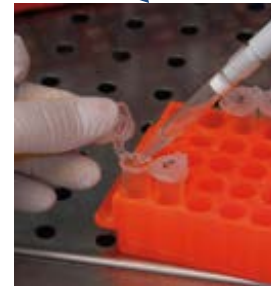
eSwab

- Получение
- Хранение
- Транспортировка

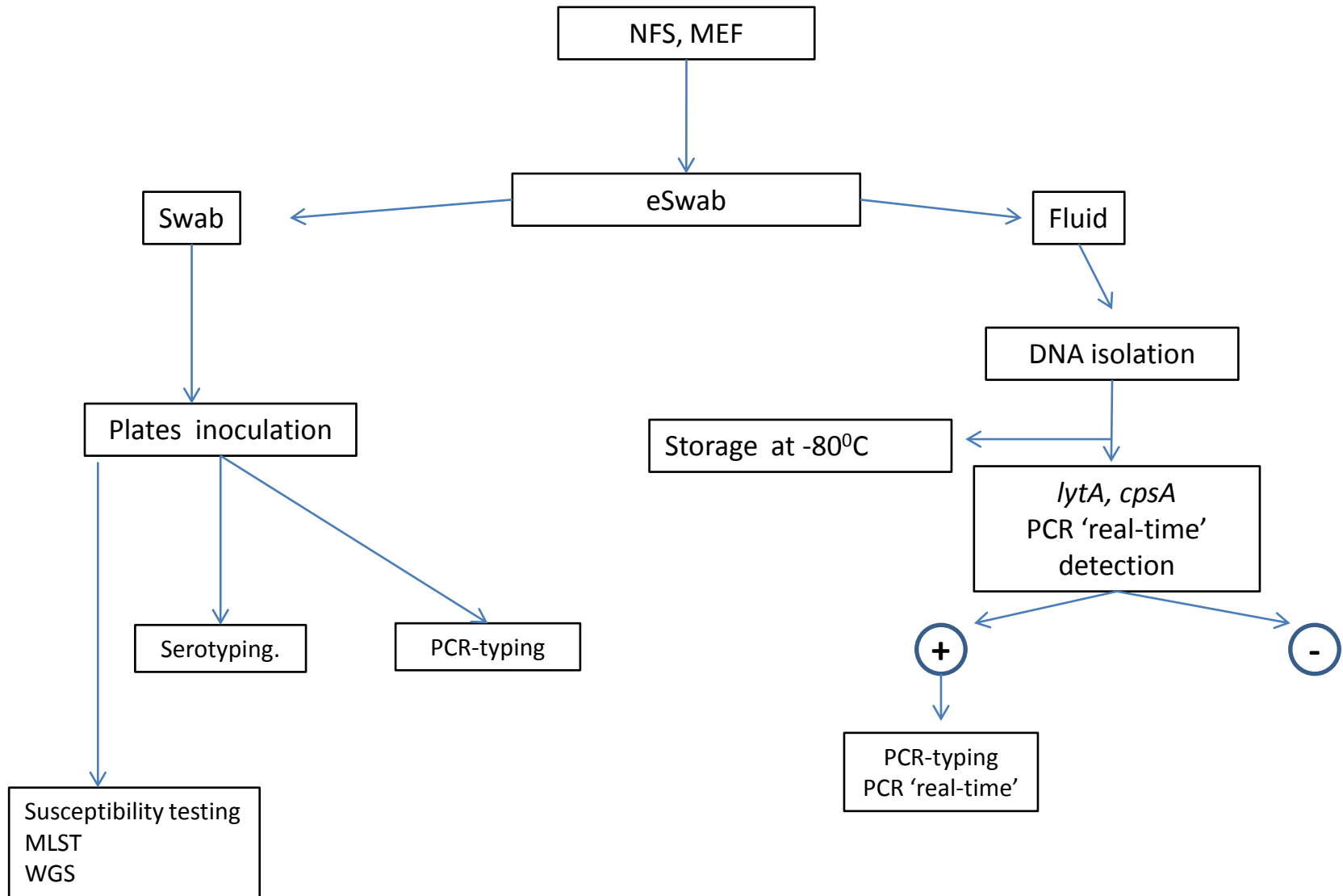
Выделение
Чувствительность
Серотипирование



Детекция ДНК
lytA, *cpsA*
Серотипирование



Respiratory samples



Blood

Blood



EDTA vacutainer



Plasma



Storage:
2°C – 8°C: days
до -20°C: weeks
при -80°C: some months



DNA isolation



Detection *lytA*, *cpsA*
PCR 'real-time'

Typing:

- Phenotypic methods (immunological serotyping, susceptibility testing....)
- Genotypic methods:
 - ✓ PCR, qPCR: confirmation of identification; determination of serotype/serogroup
 - ✓ Sequencing: confirmation of species identification (MLSA), identification of a clone (MLST), identification of serotypes in serogroup 6