



Integrated Respiratory Illness Surveillance in Germany

Data flow and reporting

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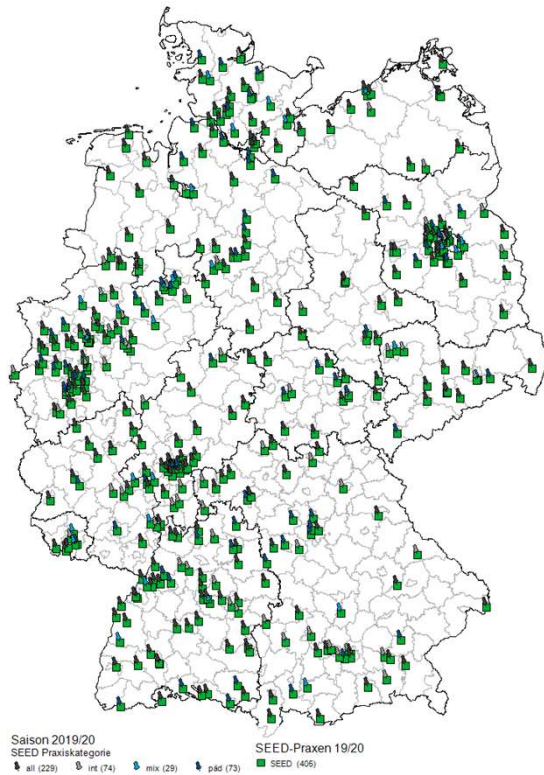
Integrated respiratory illness surveillance

- Syndromic und virological sentinel surveillance systems for acute respiratory illness. Syndromic surveillance: ICD10 based since 2013 (primary care) and 2015 (secondary care)

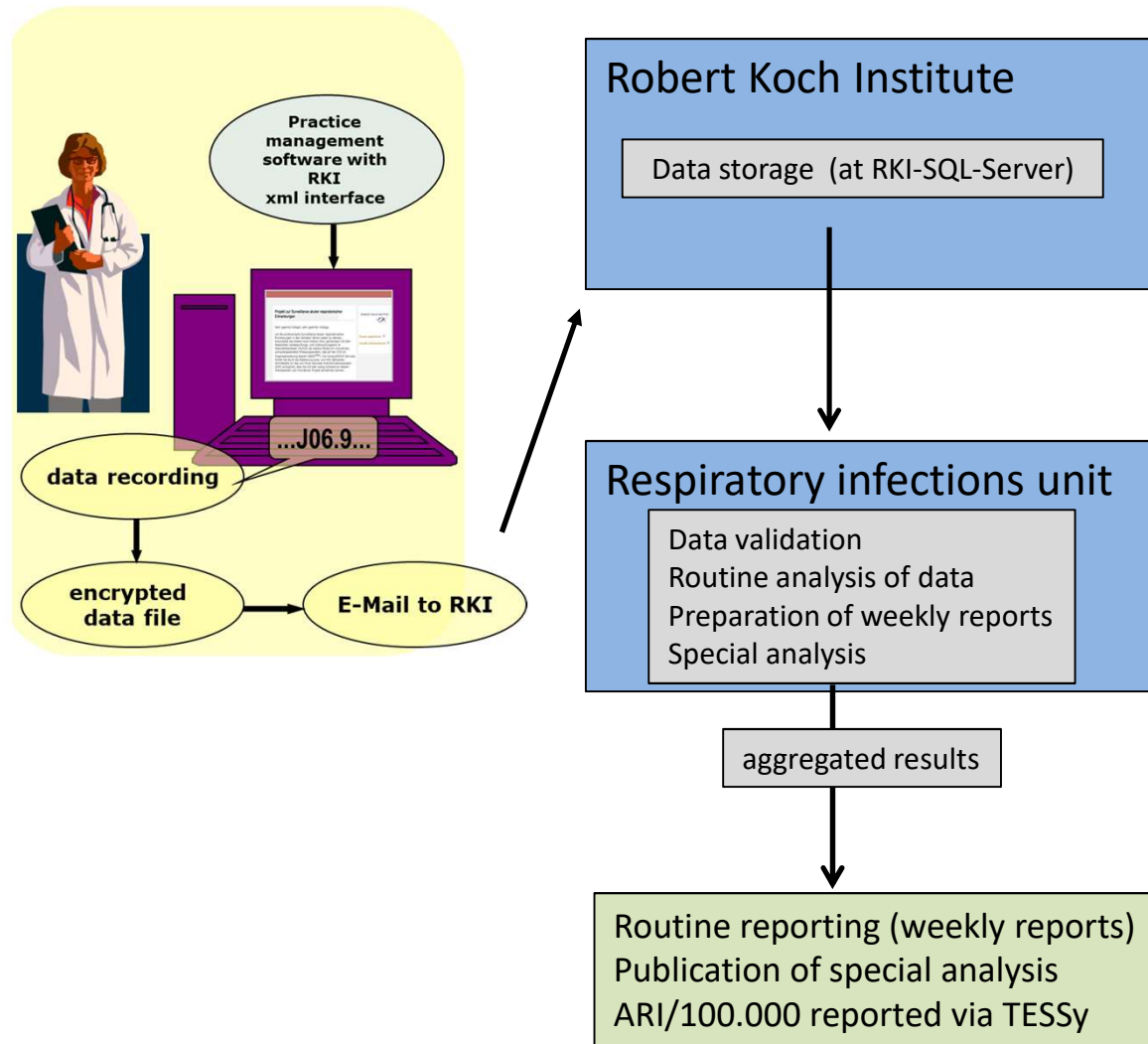
- Primary care: Medically attended ARI
 - J00 – J06 acute upper respiratory infections
 - J09 – J18 influenza and pneumonia
 - J20 – J22 other acute lower respiratory infections
 - J44.0 COPD with (acute) lower respiratory infection
 - B34.9 viral infection, unspecifiedadditionally recorded: U07.1! (lab confirmed COVID-19), certificate of incapacity for work, hospital admission

- Secondary care: Hospitalized SARI
 - J09 – J18 influenza and pneumonia
 - J20 – J22 other acute lower respiratory infectionsfor every SARI case additionally recorded:
every other diagnosis, including U07.1!, underlying conditions like diabetes, ..
hospital department, ICU, ventilation, outcome

Data flow chart ICD-10 based MAARI Surveillance (primary care)

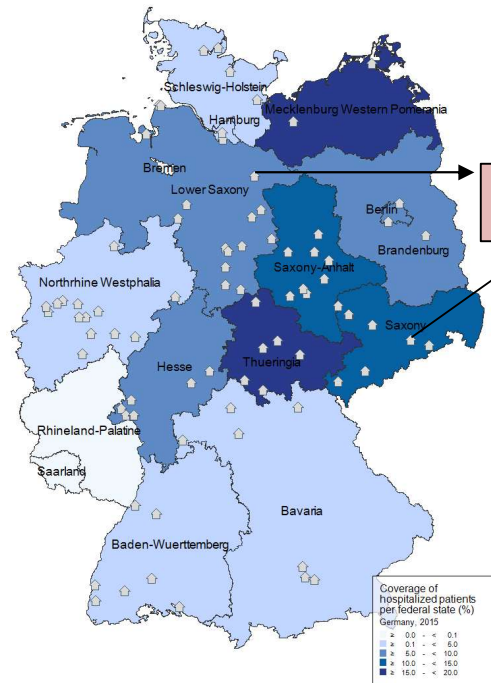


ca. 500 primary care practices with paediatricians, general practitioners

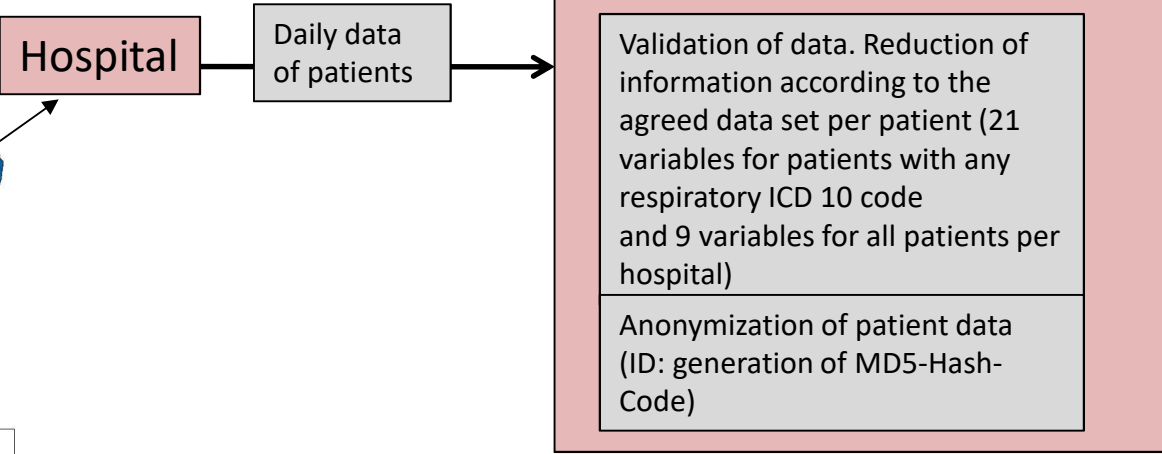




Data flow chart ICD-10 based SARI Surveillance (secondary care)



ca. 70 hospitals, patients of all ages



Weekly / daily reporting of data sets via secure file transfer according the scientific agreement between hospital network and RKI

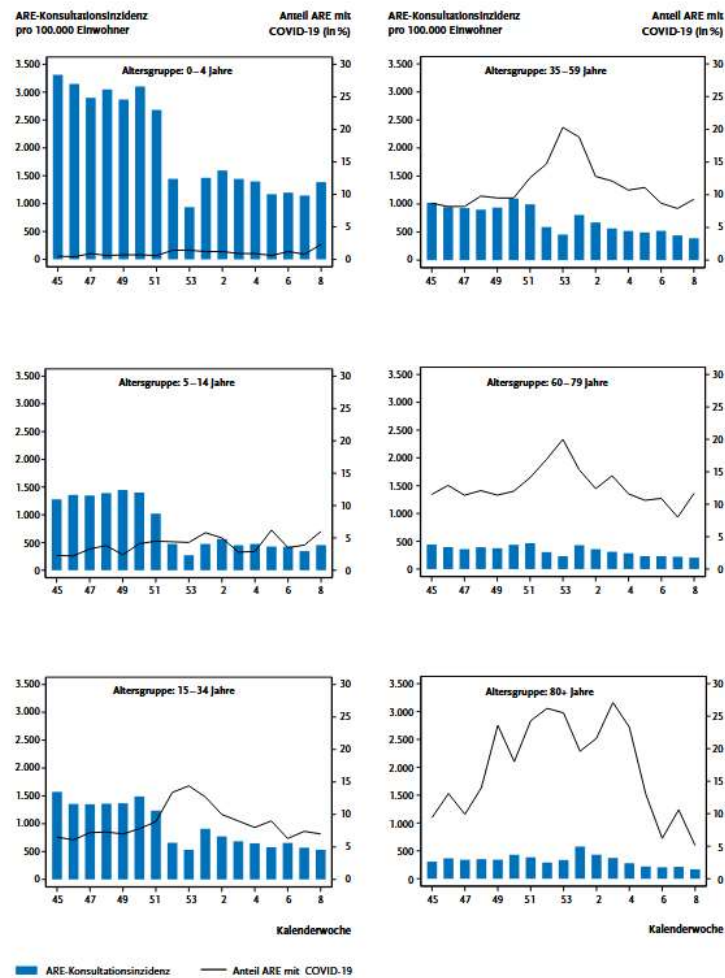
Routine reporting (weekly reports)
 Publication of special analysis
 SARI/100.000 population reported to ECDC via TESSy

Respiratory infections unit
 Routine analysis of data
 preparation of weekly reports
 special analysis

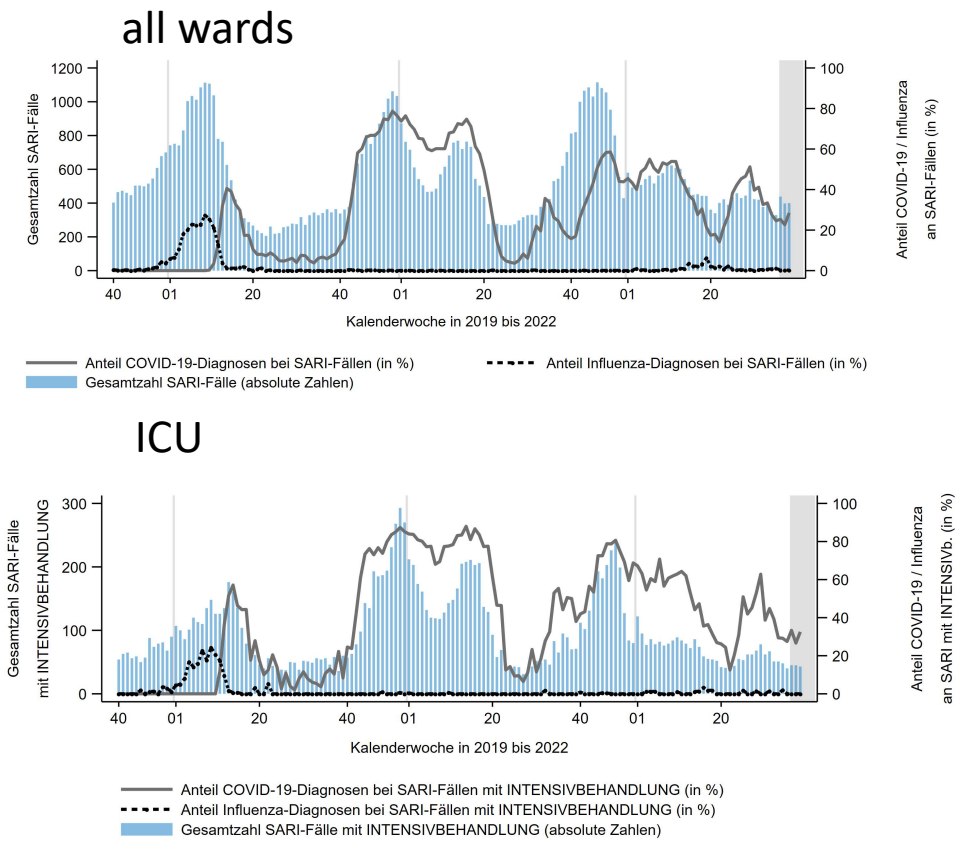
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 Data storage (at RKI-SQL-Server)

Using disease specific ICD10 codes for COVID-19 and Influenza (U07.1!; J10)

Primary care: proportion of COVID-19 diagnosis in ARI incidence in different age groups



Secondary care: proportion of COVID-19 and Influenza diagnosis in SARI cases



Summary and conclusions

- Syndromic surveillance of acute respiratory illness puts disease specific surveillance into „context“ and is needed for an integrated respiratory pathogen surveillance approach. The virological surveillance with a broad spectrum of respiratory viruses is necessary for the synopsis (→ NIC).
- Data collection must be well planned and fit for purpose.
- Data flow should be automated but flexible enough for adaptation . Validation algorithms ensure data quality.
- Permanent IT support as well as general human and financial resources are required.
- Large amounts of data are no substitute for epidemiological expertise (you need to know your data and their limitations for meaningful interpretation).

Further information/ References

Weekly ARI und SARI reporting

Weekly National Report on Acute Respiratory Illness (in German language) with results from primary and secondary care surveillance (syndromic and virological data) <https://influenza.rki.de/>

Regional data: <https://influenza.rki.de/Diagrams.aspx?agiRegion=0>

Description of the sentinel hospital surveillance system

S. Buda, K. Tolksdorf, E. Schuler, R. Kuhlen and W. Haas. BMC Public Health (2017) Establishing an ICD-10 code based SARI-surveillance in Germany – description of the system and first results from five recent influenza seasons

<https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-017-4515-1>

Publication during the COVID-19 pandemic / early severity assessment using syndromic hospital surveillance data

Tolksdorf Kristin, Buda Silke, Schuler Ekkehard, Wieler Lothar H, Haas Walter. Influenza-associated pneumonia as reference to assess seriousness of coronavirus disease (COVID-19). Euro Surveill. 2020;25(11):pii=2000258. <https://doi.org/10.2807/1560-7917.ES.2020.25.11.2000258>

<https://doi.org/10.2807/1560-7917.ES.2020.25.11.2000258>

Publication during the COVID-19 pandemic / validation of disease specific ICD10 COVID-19 diagnosis in ARI patients (primary care)

Goerlitz L, Cai W, Tolksdorf K, Prahm K, Preuß U, Wolff T, Dürrwald R, Haas W, Buda S: ICD-10-Code-basierte syndromische Surveillance akuter Atemwegserkrankungen mit COVID-19 im ambulanten Bereich. Epid Bull 2021;30:3 -10 | DOI 10.25646/8849

https://www.rki.de/DE/Content/Infekt/EpidBull/Archiv/2021/Ausgaben/30_21.pdf

Analysis of risk factors for severe RSV disease

Cai W, S Buda, E Schuler, S Hirve, W Zhang, W Haas. Risk factors for hospitalized respiratory syncytial virus disease and its severe outcomes. Influenza Other Respir Viruses. 2020 Nov;14(6):658-670. doi: 10.1111/irv.12729. Epub 2020 Feb 16.

<https://onlinelibrary.wiley.com/doi/10.1111/irv.12729>