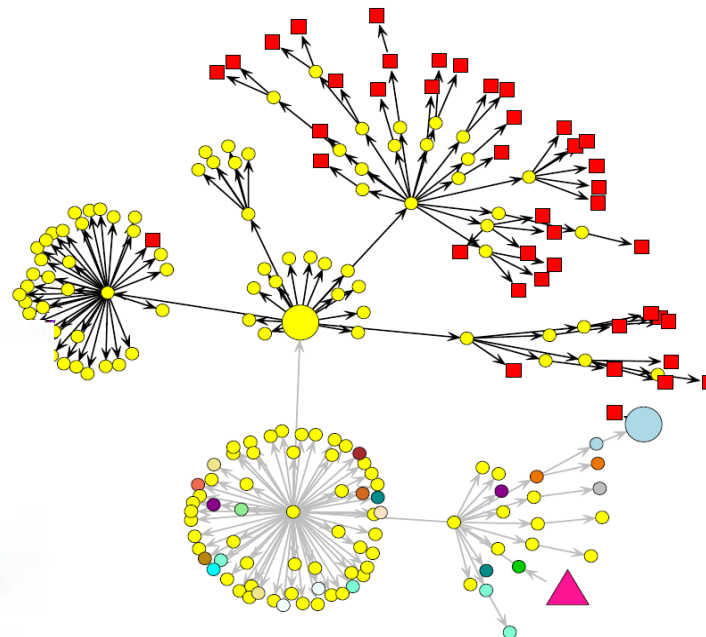


Was wird wann zurückverfolgt? – Blick aus Public Health Sicht – (+ Synergien zwischen PH- und LM-Behörden nutzen)



Marion Gottschald, Alexander Falenski, Marco Rügen, Birgit Lewicki, Isaak Gerber, Dominic Tölle, Annemarie Käsbohrer and Armin A. Weiser

When and what to trace?

Tracing is resource-intensive

- coordination of many investigators, different authorities, many counties/countries
- decide when and what to trace

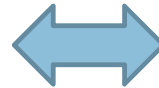
**You might not have the resources to trace all suspected foods.
Some paths might be misleading.
You have to weigh the effort and benefit.**

- review all available data in a multidisciplinary team (epidemiologists, microbiologists, tracing experts)

detailed information on cases, delivery dates, quantities, sources + conditions of food received, shipping containers, labels, documents, lot numbers, facilities involved, sampling results

When to trace?

Local foodborne outbreak



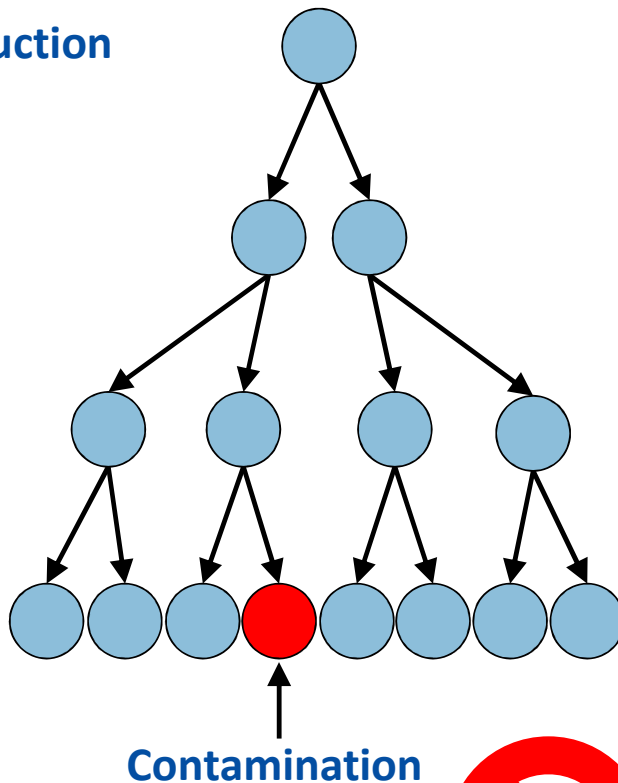
Diffuse FBO affecting multiple locations/countries

Primary production

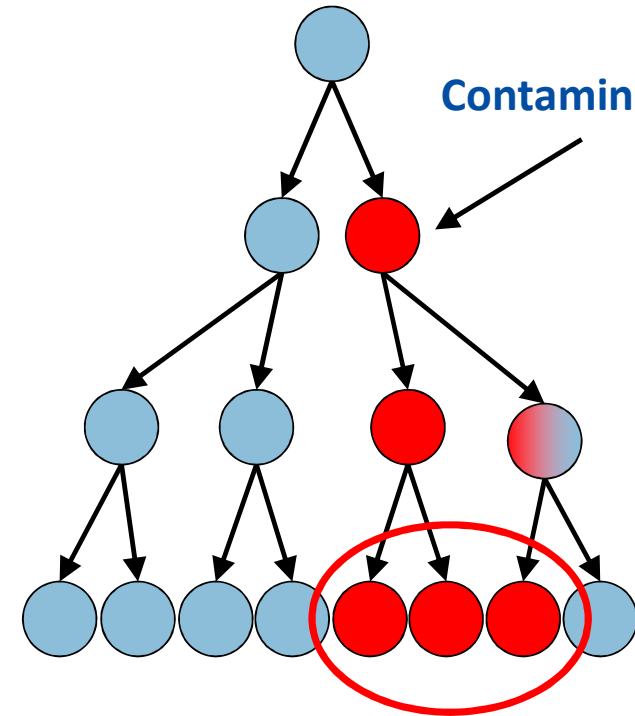
Processing

Distribution

Preparing



Tracing



Tracing



When to trace? Further indications

Pathogen

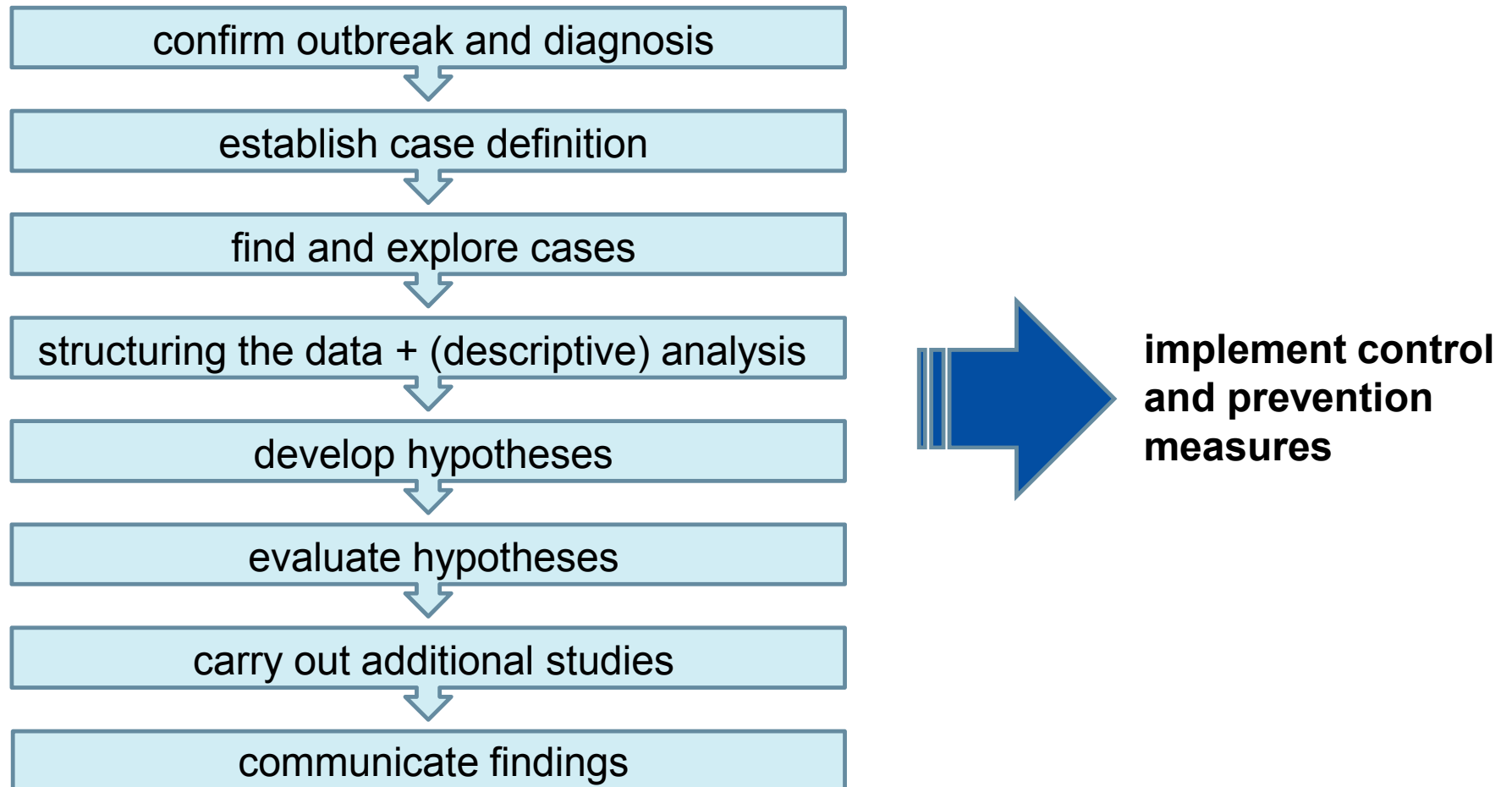
- is uncommon
- is emerging/re-emerging
- limited knowledge about pathogen → gain experience about its ecology
- causes severe diseases

Food

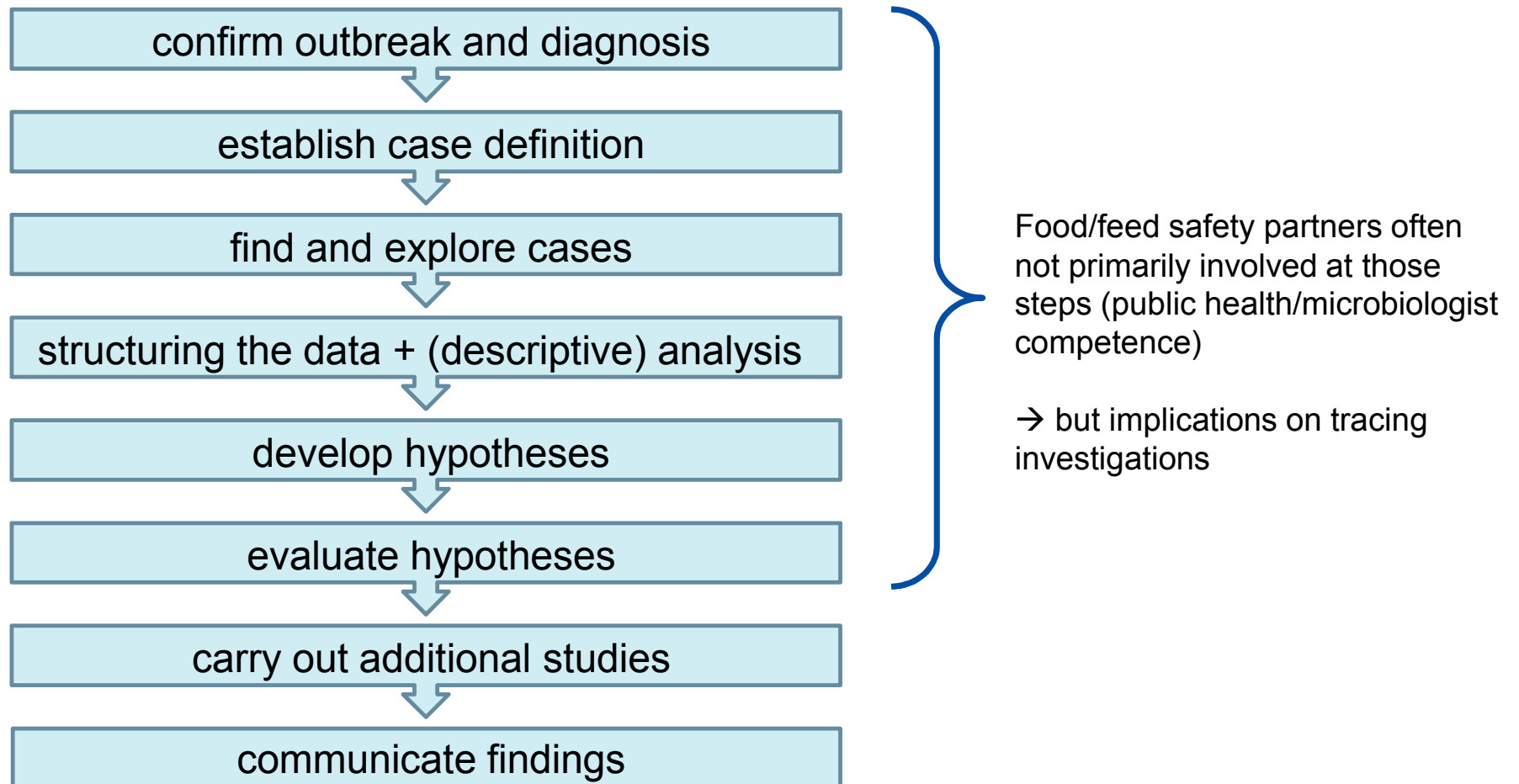
- expected to be eaten raw or lightly heated (vegetables, shell eggs, shellfish)
- unlicensed, illegally sold food involved
- food is adulterated

New or unusual vehicle

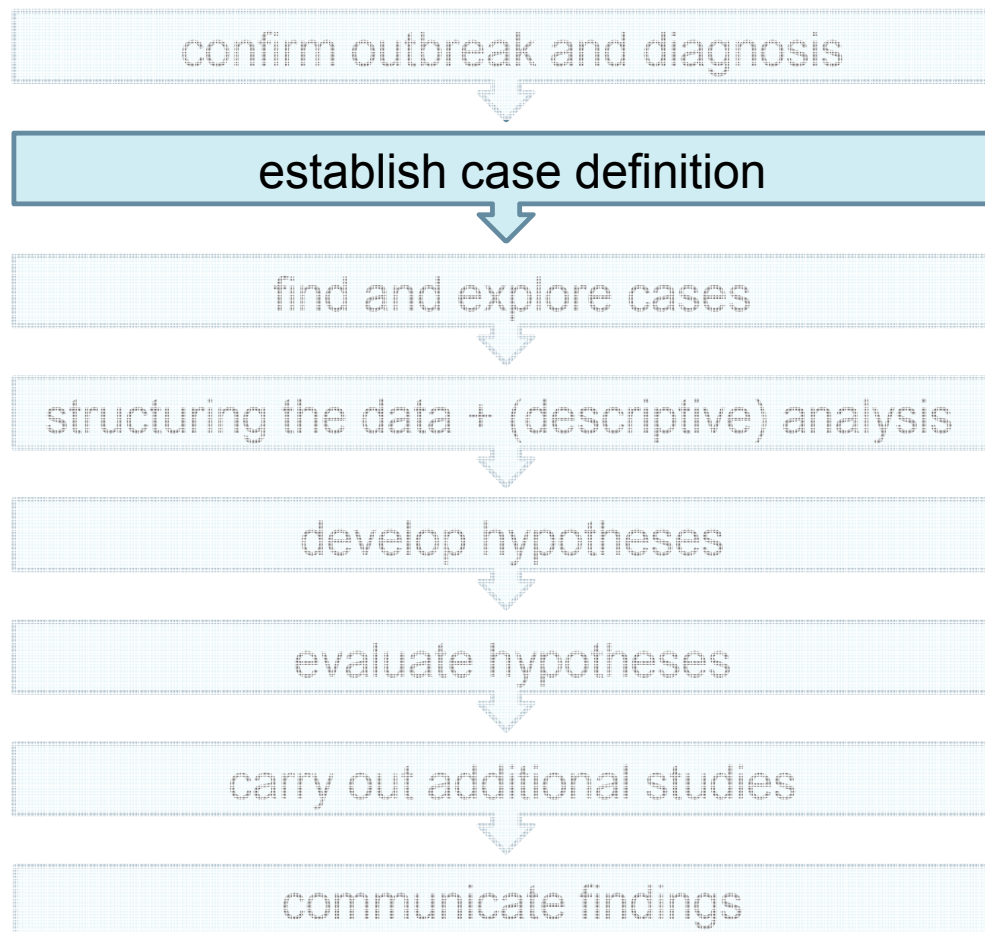
Steps of an outbreak investigation



Steps of an outbreak investigation



Steps of an outbreak investigation – implications on tracing



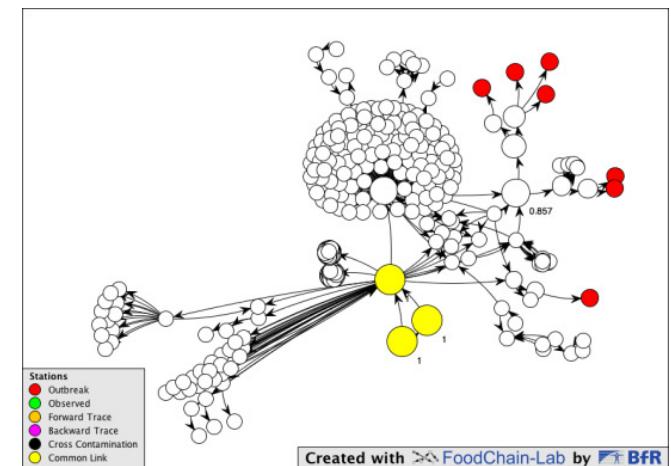
Case definition – which cases to trace back?

Exclusion criteria:

- genotype of isolate different from outbreak strain
- secondary cases
 - infection transmitted person-to-person
 - no exposure to contaminated food item
- (travel-related cases)
 - travel history abroad prior to a certain period of time before onset of symptoms
 - relevant for e.g. HAV outbreak

If many cases: select the most promising cases/clusters to trace back

- e.g. EHEC outbreak 2011 → 4000 cases → only 7 clusters traced back (well described; most different from each other; in part travel groups)

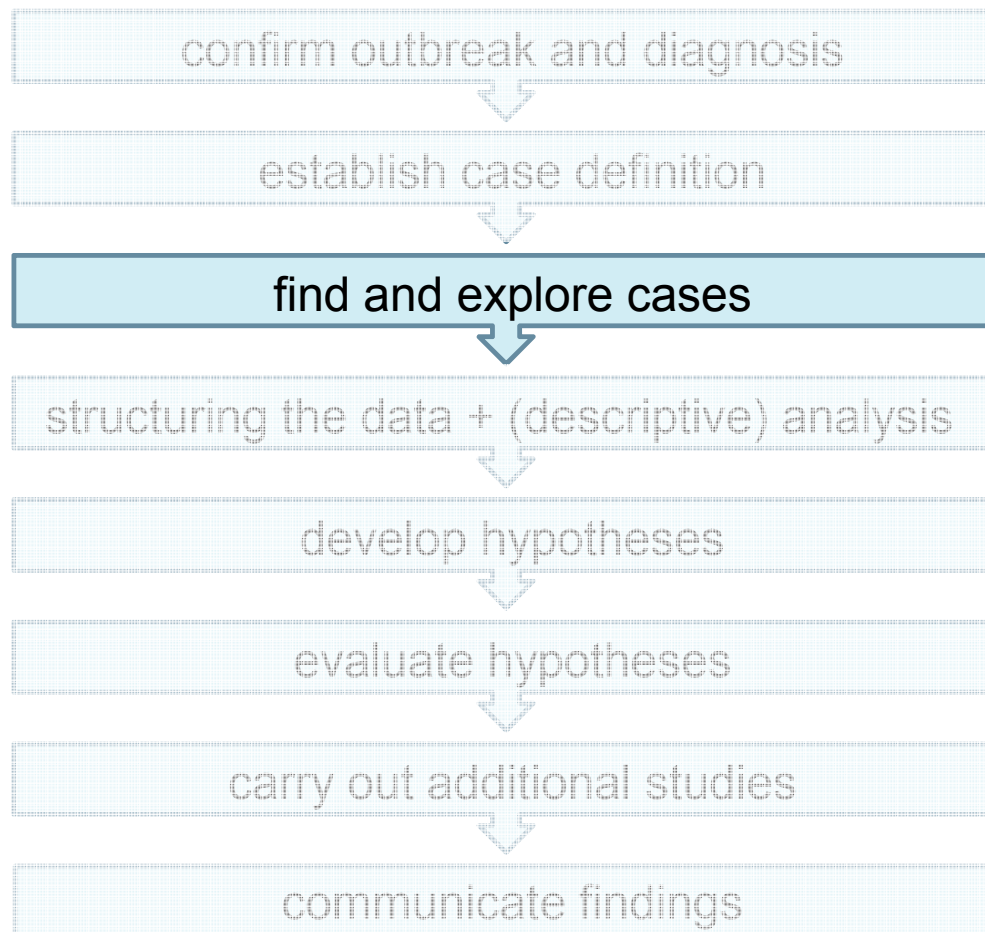


Case definition – which cases to trace back?

- Focus on e.g.
 - Confirmed cases
 - Well-described cases
 - Detailed information on diet
 - Limited period of when products were bought/restaurant was visited
 - Kitchens with well-defined menus (catering, restaurants, community catering (schools/elderly homes/hospitals/meals-on-wheels) → person-specific information on consumed food)
 - Retained samples (voluntary)
 - Evidence higher for clusters of diseased persons than for single diseased persons

CAVE: All outbreaks are different!

Steps of an outbreak investigation – implications on tracing



Explore cases

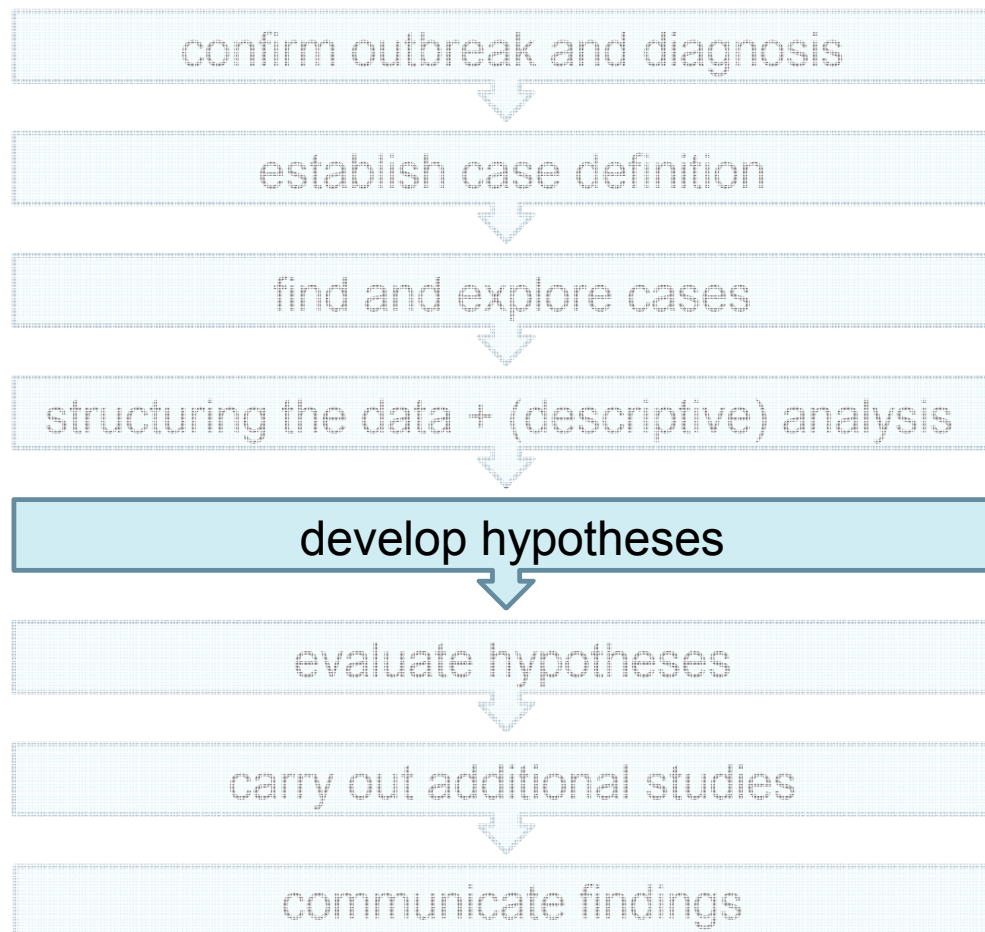
- ask for relevant exposure (food intake (what/where), other diseases, travel history, sexual contacts) → identify what is common to all cases

For traceback analyses:

Who ate what, when, how much and how?

- gather information on (suspect) product → as detailed as possible
→ **product name, lot number, best before date, print code** (eggs), egg packer (eggs), **date and place of shopping or restaurant visit**, package size ...
- usual consumption and shopping habits
- photos of fridge content
- photos of packaging of (suspect) product → product name, weight, lot number, best before date, ...
- limit shopping date/date of restaurant visit as much as possible

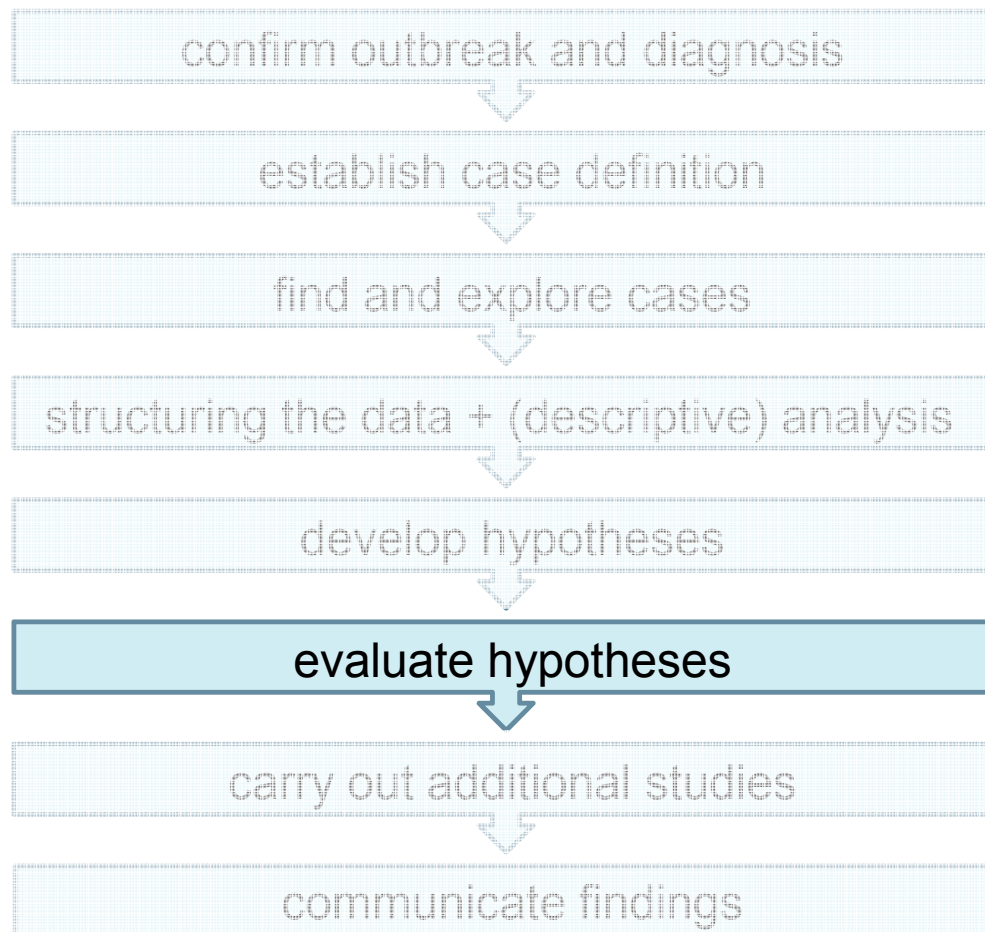
Steps of an outbreak investigation – implications on tracing



Food and feed safety partners involved as soon as food is suspected as vehicle of infection

visit kitchen/food company
interviews with caterers, kitchen staff
tracing

Steps of an outbreak investigation – implications on tracing



Evaluate hypotheses

Interpreting example from EHEC, 2011:

b. Matched case control study in 3 hospitals focussed on fruits and vegetables, May – June 2011

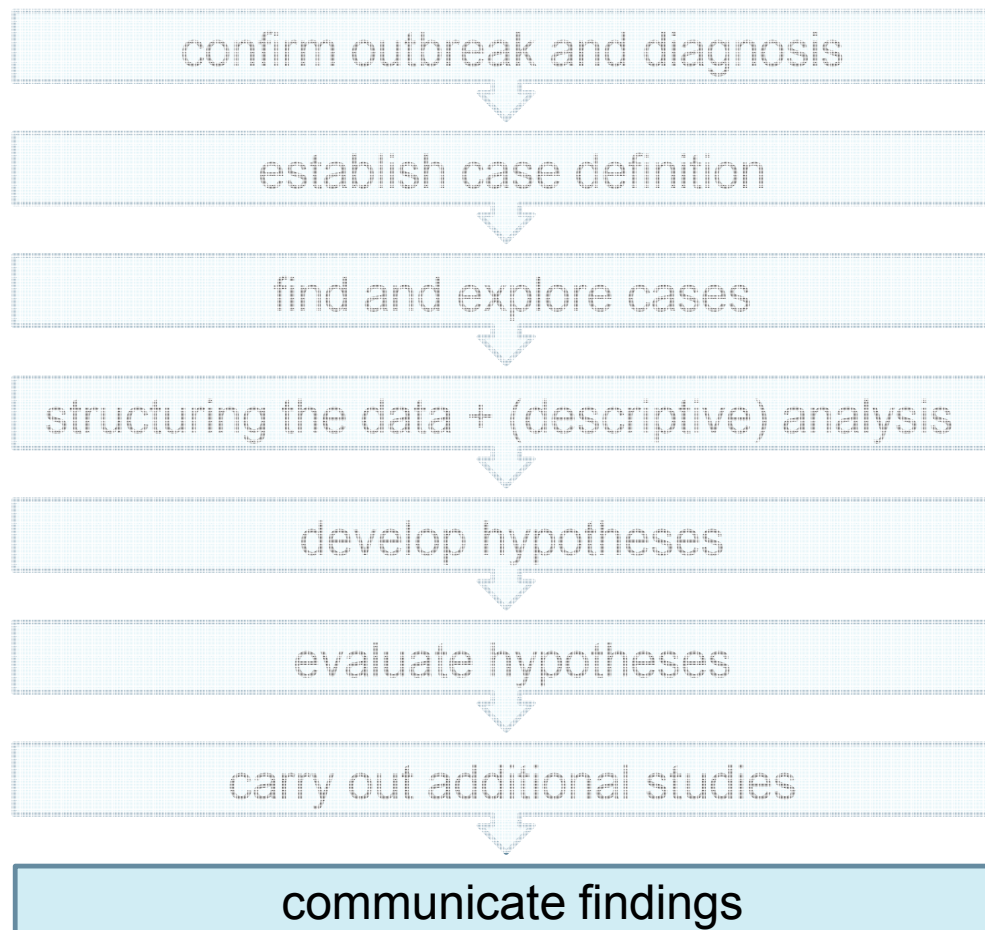
Table 1. Vegetables or Fruits Evaluated in a Case–Control Study in the German Outbreak.*

Food Item	Case Subjects Exposed	Control Subjects Exposed	Matched Odds Ratio (95% CI)	P Value
	no./total no. (%)			
Sprouts	6/24 (25)	7/80 (9)	4.35 (1.05–18.0)	0.04
Cucumbers	22/25 (88)	52/79 (66)	3.53 (0.96–12.9)	0.06
Apples	22/24 (92)	57/81 (70)	3.91 (0.86–17.7)	0.08
Peppers	16/24 (67)	35/80 (44)	2.66 (0.90–7.9)	0.08
Strawberries	19/26 (73)	43/81 (53)	2.33 (0.90–6.0)	0.08

Buchholz et al., N Engl J Med 2011; 365:1763-1770

What food item would you like to trace?

Steps of an outbreak investigation – implications on tracing



Communication to public/media: implications on companies vs. authorities

Tracing investigations → irreparable reputational damage to food companies

- Be careful with interpretations (common source or just high market share)
- every investigation step (also epidemiological, microbiological) + communication to media/public must be accurate
- otherwise: legal disputes, compensation claims

E.g. EHEC outbreak 2011 → communication error on Spanish cucumbers

© BILD newspaper: „The deadly germ comes from Spain“

Communication between authorities during investigation

public health authorities

food safety authorities



discuss available information

prioritize (what to trace?)

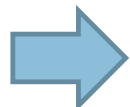
agree on investigation plan

regularly share updates on tracing investigation

joint interpretation of results (how do tracing results relate to epi-, lab-,
environmental results?)

re-evaluate (tracing) investigation strategy based on multidisciplinary results

Ideally even before crisis:



build functional network, set up contact list, set up tracing system, develop
joint protocols, training

Summary

- Tracing is resource-intensive
 - Focus on promising starting points for tracing
- Use synergies between public and food safety authorities
 - E.g. for interviewing the cases
- Regularly share updates on your analyses with multidisciplinary team
 - Facilitates interpretation of results + re-evaluation of strategy



Thank you for your attention

Marion Gottschald

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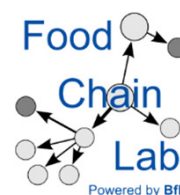
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