

**CONTACT STRUCTURES OF BROILER FARMS IN SUBANG DISTRICT:  
AN AVIAN INFLUENZA PERSPECTIVE**

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**Introduction**

The entry and establishment of infectious diseases such as highly pathogenic avian influenza would have severe consequences for the poultry industry. To better understand how disease might be transmitted between farms by direct and indirect contact, information is needed on the type and magnitude of contacts between farm enterprises and those that provide services to the agriculture sector.

Social network analysis (Wasserman & Faust 1994) provides a means for formalizing this process, allowing patterns of contact to be described and quantified. Although this method has been widely used in social sciences and human epidemiology, it has only recently been applied to understand the potential for disease spread among animal populations.

The Netherlands experienced a large Avian Influenza (AI) H7N7 epidemic, which started in the Gelderse Vallei and spread to Brabant and Limburg (Stegeman et al., 2004). The outbreaks appeared in clusters suggesting neighborhood spread, but also virus spread over larger distances took place. Although airborne spread may have played a role in neighborhood spread, in general it is assumed that for AI transmission, contacts between farms by e.g. poultry, people or vehicles play a crucial role particularly before control measures are in place (Thomas et al., 2005).

**Material and Method**

This study was conducted in sector 3 broiler farms in Cipunagara subdistrict, Subang district, West Java province, from February to April 2009. Based on data from the Livestock Service Office, there are 25 broiler farms in the region. When the study started only 20 farms were still in operation. Negotiation managed to recruit all farms to participate in the study.

The study was conducted using questionnaires and logbooks. A questionnaire was used to collect general information on farm characteristics, for example the number of birds, biosecurity application, and types and frequency of contacts in the farm. Meanwhile, the logbook was used to record all types and frequency of contact that occurred during the study period.

Data collection using questionnaires was conducted through interviews by enumerators from FKH IPB. Data collection with logbooks was conducted by the farm owner or farm employees assigned by the owner. Filling of the logbook was supervised regularly by officers from the livestock service office and FKH IPB. Data collection through the logbook was conducted for 53 days to obtain data throughout the production and empty period which varied from farm to farm. Data was analyzed descriptively using SPSS 13.0 software.

**Result and Discussion**

The data collected from 20 broiler farms in a period of 53 days showed that the average production period was 62 days and the average empty period was 38 days. In total there

were 3,297 contacts that occurred during the study period, comprising of 3,297 human contacts (100%), 1,688 vehicle contacts (51.2%), and 674 equipment contacts (20.4%). In vehicle contact, 38.6% was with motorcycle, 6.4% with pick-up trucks, and 3.3% was with bicycles. Meanwhile equipment contact consisted of chicken crates (2.8%) and cleaning equipments (1.6%).

Data from the logbook indicated there were 13 types of contacts that occur in broiler farms. The type and frequency of contacts is shown in the Table below:

Table 1 Type and Frequency of Contact on Chicken Broiler Farm in Cipunagara Sub district , Subang district.

No	Type of contact	Number of contacts			
		All	Per Farm	Empty Period	Production Period
1.	Poultry delivery	45 (1.4%)	2.25	7(15.6%)	38(84.4%)
2.	Fix and setting facilities	156 (4.7%)	7.8	104(66.7%)	52(33.3%)
3.	Health inspection	72(2.2%)	3.6	1(1.4%)	71(98.6%)
4.	Manure and litter collection	58(1.8%)	2.9	26(44.8%)	32(55.2%)
5.	Poultry collection	141(4.3%)	7.05	0(0%)	141(100%)
6.	Cleaning and disinfection	158(4.8%)	7.9	112(70.9%)	46(29.1%)
7.	Delivery of poultry stuffs	225(6.8%)	11.25	42(18.7%)	183(81.3%)
8.	Delivery of non-poultry stuffs	116 (3.5%)	5.8	13(11.2%)	103(88.8%)
9.	Vaccination	20(0.6%)	1	0(0%)	20(100%)
10.	Working	1,310(39.7%)	65.5	90(6.9%)	1,220(93.1%)
11.	Just visit	624(18.9%)	31.2	213(34.1%)	411(65.9%)
12.	Controlling	170(5.2%)	8.5	44(25.9%)	126(74.1%)
13.	Others	202(6.1%)	10.1	64(31.7%)	138(68.3%)
Total		3,297	164.85	716(21.7%)	2,581(78.3%)

Data in Table 1 shows that in all 20 farms, there were 3,297 contacts in total or an average of 164.85 contacts per farm. About 78.3% of contacts occurred during production and 21.7% occurred during the empty period. Overall, most contact was conducted by farm owners or employees with 39.7% or 65.5 contacts per farm and the least contact was from vaccination programs with 0.6% or 1 contact per farm. Both contacts were proportionally higher in the production period.

The data also shows that of all contacts that occurred, 2,111 (64%) contacts had access to poultry sheds and 1,662 (50.4%) contacts were even with poultry in the sheds.

### Conclusion

In broiler production practices, there are many types and occurrences of contacts that are related and even some unrelated to chicken production. These contacts are a risk for disease introduction into farms, therefore it is important to reduce its magnitude or eliminate it completely.

### Reference

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