Formulae for Determining Contact Hours

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April 2020

Since monitoring of programs will not be occurring during the COVID19 pandemic are there ways to measure compliance without actually needing to do observations in facilities, such as centers or homes. There is when it comes to adult child ratios and group sizes by using a metric which uses the number of contact hours (CH) and determining if there is any relationship to COVID19 infections. And it involves asking the following six questions:

1. **When does your first teaching staff arrive or when does your facility open?**
2. **When does your last teaching staff leave or when does your facility close?**
3. **Number of teaching/caregiving staff?**
4. **Number of children on your maximum enrollment day?**
5. **When does your last child arrive?**
6. **When does your first child leave?**

After getting the answers to these questions, the following formulae can be used to determine contact hours (CH) based upon the relationship between when the children arrive and leave (TH) and how long the facility is open (TO):

(1) CH=((NC(TO+TH))/2)/TA;   (2) CH=(NCxTO)/TA;   (3) CH=((NCxTO)/2)/TA;   (4) CH=(NC$^{2)/TA}$

Where: CH = Contact Hours; NC = Number of Children; TO = Total number of hours the facility is open; TA = Total number of teaching staff, and TH = Total number of hours at full enrollment.

By knowing the number of contact hours (CH) it will be possible to rank order the exposure time of adults with children. This metric could then be used to determine if greater contact hours is correlated with the increased risk of the COVID19 virus, for example. The following chart can be used by entering the following metrics (example in the table is based upon 5 enrolled children (NC)): the facility is open for 10 hours (TO) and then various scenarios are played out for how long the facility is at full enrollment (TH). Based upon these metrics an outcome rubric can be used where less CH is a positive (+), while high CH is a negative (-). For simplicity, the following chart is based upon one teaching staff (TA) being present (1:5 Adult-Child Ratio).

Contact Hour Score Generated from Above 4 Formulae and Potential Outcomes (COVID19 Infections)

Contact Hours - CH Score	Formulae for CH Score	Potential Outcomes
25	(5 (NC) + 10 (TO)) / 2	+
37.5	(5 (NC) (5 (TH) + 10 (TO)) / 2	+ / -
50	5 (NC) x 10 (TO)	-/ +
62.5	5 (NC) x 12.5 (TO)	-