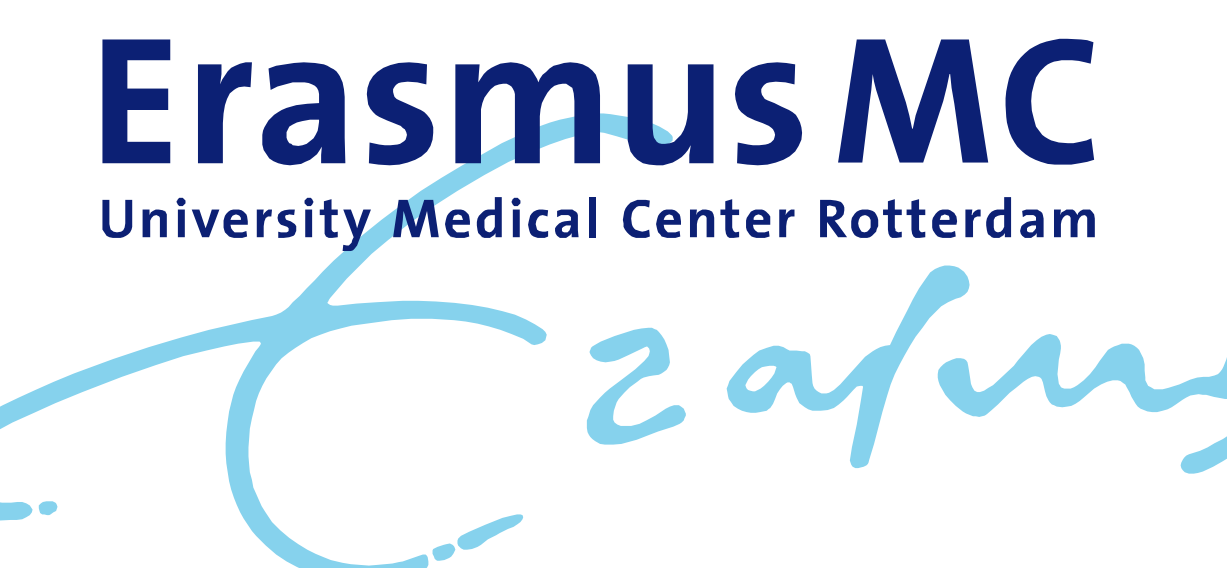




Environmental contamination after relocating to a hospital with only single-occupancy rooms

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Background

In May, 2018, the Erasmus MC University Medical Center in Rotterdam, the Netherlands, relocated from an old hospital building with mainly multiple-occupancy rooms with shared bathrooms to a newly constructed hospital with 100% single-occupancy rooms and private bathrooms.

Aim

To determine the effect of relocating to a hospital with only single-occupancy rooms on environmental contamination with highly resistant microorganisms (HRMO).

Conclusion

This study shows that a newly constructed hospital with 100% single-patients rooms has a positive effect on the presence of HRMO lasting at least 36 months after opening.

Results

Number of colony forming units

- Build up during the first 3 months, fluctuating levels afterwards (**Figure 3**)
- **Lower CFU counts** during COVID-19 pandemic
 - Significantly lower in single-occupancy rooms ($P < 0.05$)
 - Lower in other room types, but not significantly

Presence of HRMO

In the old building

- **24 of 724** locations (3.3%) were positive for **30 HRMO** (**Figure 1**)
 - 87.5% of HRMO identified in sink drains

In the new building

- **5 of 4269** locations (0.1%) were positive for **5 HRMO** (**Figure 1**)
- 60.0% of HRMO identified in shower drains, no HRMO identified in sink drains
- **Significant decrease** ($P < 0.001$)

Figure 1. Timeline of the MOVE study with arrows indicating sampling moments, including the number of identified HRMO at those sampling moments.

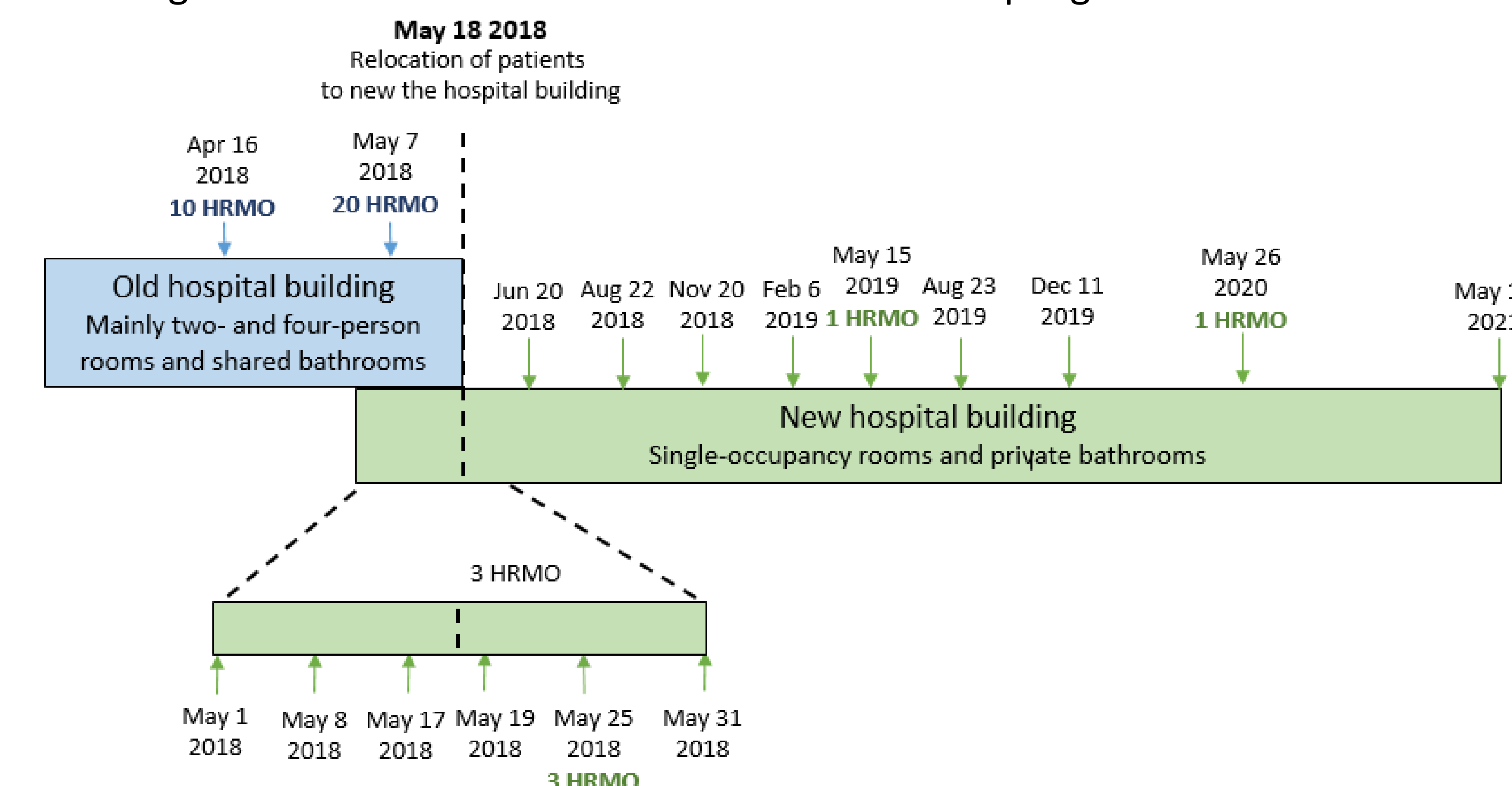
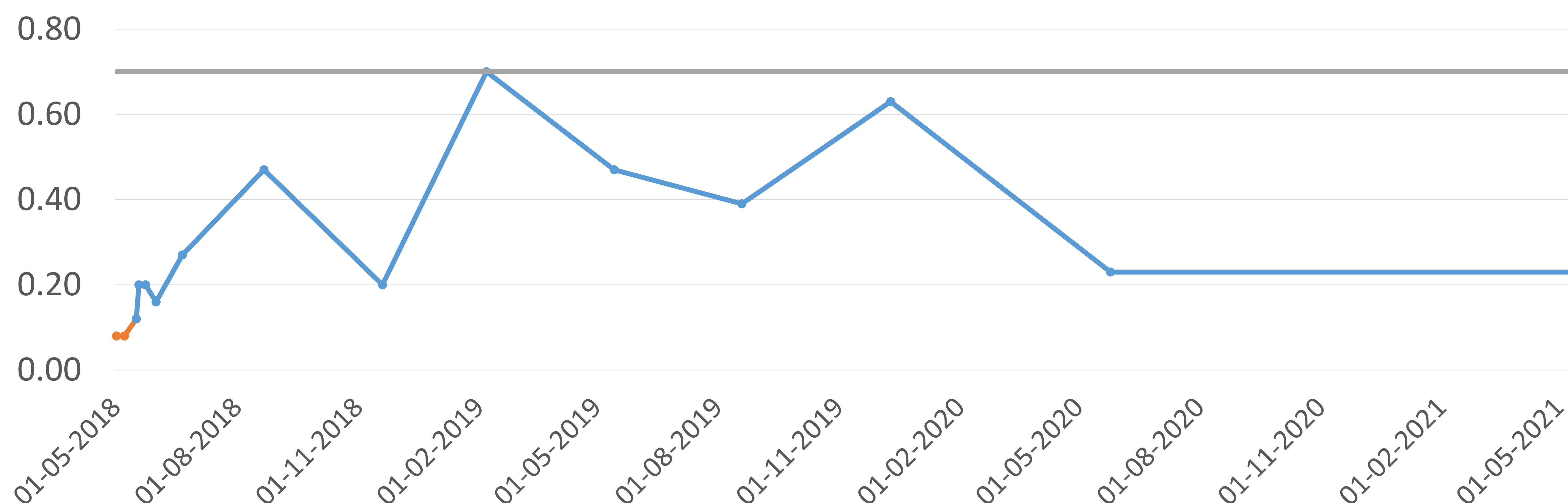


Figure 3. Overall median CFU count per cm² determined over time in the new hospital building and the CFU count per cm² determined in the old hospital building one month before relocating as a reference. Grey line; reference value, old building one month before relocating, **Orange**; before transferring patients, **Blue**; after transferring patients. X-axis; sample date, Y-axis; CFU count/cm²



Methods

- Environmental sampling took place twice in the old building and 15 times in the new building (**Figure 1**).
- Samples were taken from 13 locations in 40 different patient rooms (**Figure 2**)
- For each location we determined:
 - The total bacterial load (colony forming units, CFUs)
 - The presence of different HRMO, *e.g.* *Escherichia coli*

Figure 2. Floorplan and sampled locations in single-occupancy rooms and private bathroom

