

The use of disease burden scenarios at the municipal level: A tool to convince municipalities to upgrade infection prevention and control organization and competencies?

Elsebeth Tvenstrup Jensen¹, Asja Kunøe², Jette Holt¹

¹National Center for Antimicrobials and Infection Control, Statens Serum Institut, Copenhagen, Denmark, ²Hospital Services and Emergency Management, Danish Health and Medicines Authority, Copenhagen, Denmark.

BACKGROUND

Few Danish municipalities have infection prevention and control (IPC) organizations. They are challenged by early patient discharge from hospital, increased complexity of home care needs, and a rising proportion of elderly citizens, as well as microorganisms such as MRSA, *C. difficile*, and norovirus circulating in the community. As the latter and other gastrointestinal as well as respiratory pathogens are transmitted in and between kindergartens, schools, homes, and workplaces, they are causing parents' and other persons' absence from work and are thus a general burden for the family as well as for productivity of society, besides the inherent burden of morbidity and mortality.

In a series of guidance publications aimed at encouraging the municipalities to work with prevention issues, the Danish Health and Medicines Authority has therefore decided also to focus on infection prevention and control (1).

OBJECTIVE

The objective of this project was to develop a supplementary visualization part of an IPC package designed for use by the municipality.

MATERIALS AND METHODS

Data from a literature review on disease burden (infections common in the community) and effects of intervention were analyzed. No adjustment was made for possible differences in epidemiology due to geography and time. Disease burden data were applied to a virtual Danish municipality with 50,000 inhabitants and a typical age distribution, based on data from Danish Statistics. These virtual data were listed as facts and incorporated into a prevention package for administrators and politicians at the municipal level. The complete list of contents of the guidance document – the IPC prevention package – is shown in Fig. 1.

Fig. 1. Contents of the IPC guidance document

- Facts
- Recommendations (basic and developmental)
 - Framework (organization)
 - Acute preparedness
 - Ongoing tasks
- Information and education
- Implementation and follow-up
 - Competencies
 - Collaboration and partnerships
 - Monitoring and indicators
- Literature and references to existing guidelines, guidance documents etc.

Inspiration for action and cases are included.

Examples of material for inspiration are shown in Fig. 2,

Fig. 2. Materials for inspiration in the municipality's IPC work



RESULTS

Burden scenario in a virtual municipality of 50,000 citizens with a typical age distribution

- There are 7,000 annual cases of acute gastroenteritis among children below 5 years, and among these 40 cases of hospitalization due to acute gastroenteritis (2).
- On any day, 1,100 citizens have acute gastroenteritis (3).
- Annually, 70,000 cases of acute gastroenteritis are to be expected (3).
- Upper respiratory infection in adults leads to 29,000 lost working days annually (4).
- Among persons older than 60 years living in their own home, 12,000 upper respiratory infections are to be expected, leading to
 - 180,000 sick days in those elderly persons
 - More than 4,000 visits to the GP
 - 1200 home visits by GP
 - More than 4,000 in need of assistance for shopping, laundry, and cooking
 - More than 4,000 antibiotic treatments (5)
- On any day, 14-32 citizens living in nursing homes have an infection (6,7,8)

Intervention results (not adapted to scenario)

- A Danish study focusing on hand hygiene in children's institutions showed a 34 % reduction in illness due to infection (9).
- A Finnish study in 10 children's institutions reduced parents' absence due to children's illness by a total of 2,5 man-years per year (10).
- A hand hygiene study among Danish school children reduced absence per child per year by 2,8 days, and saved an estimated amount of DDK 5,292 (€ 570) per child per year (11).
- A hand hygiene intervention study in an ordinary (administrative) workplace resulted in a reduction of 0.78 absence days due to cold per person per year (12).

DISCUSSION AND CONCLUSIONS

In the consultation phase (September-October 2012), approximately 41 % of the municipalities responded, most with positive comments.

Some municipalities have asked for more examples and details on cost of illness and benefits of intervention.

If more data had been available on age, institutional, and work force distribution for the purpose of the guidance document, data on intervention could have been better able to illustrate the possible benefits of intervention.

The scenario visualization of disease burden and the consequences of intervention vs. non-intervention could be a means by which politicians and administrators realize the potential beneficial effects of increased focus on IPC.

Integrating this "real-place" scenario into a ready-to-use prevention package might therefore be helpful in the decision of upgrading IPC organization and competencies in the municipality.

REFERENCES

1. Prevention package on infection prevention and control (draft version, September 2012). Danish Health and Medicines Authority.
2. Dennehy P. *Pediatr Infect Dis J* 2000; 19:S103-105.
3. Müller L, Korsgaard H, Ethelberg S. *Epidemiol Infect* 2012; 140:290-298.
4. Garibaldi RA. *Am J Med* 1985; 78(6) Suppl. 2:32-37.
5. Nicholson KG, Kent J, Hammersley V et al. *BMJ* 1997; 315:1060-1064.
6. Eriksen HM, Koch AM, Elstrøm P et al. *J Hosp Infect* 2007; 65:334-340.
7. Eikelenboom-Boskamp A, Cox-Classens JHM, Boom-Poels PGM et al. *J Hosp Infect* 2011; 78:59-62.
8. Results from the Danish part of ESAC and HALT study (nursing homes). *CEI-Nyt* 121, April 2012.
9. Ladegaard, MB, Stage V. *Ugeskr Laeger* 1999; 161:4396-4400.
10. Uhari M, Möttönen M. *Pediatr Infect Dis J* 1999; 18:672-677.
11. Nandrup-Bus I. *Am J Infect Control* 2009; 37:820-826.
12. Hübner NO, Hübner C, Wodny M et al. *BMC Infect Dis* 2010; 10:250.