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Is post-discharge surveillance of surgical patients really worth it? Results observed in three years of a multicenter study

Background

- Surgical site infections (SSIs):
  - can account for 25% of all nosocomial infections;
  - contribute significantly to the economic burden resulting from infectious complications.
- An active surveillance program can reduce subsequent rates by up to 40%, since 19% to 65% of these infections are diagnosed after patient discharge.
- However, there is no standard method for conducting this surveillance and the best methodology is still unknown.

Methods

- Prospective surveillance according to the National Healthcare Safety Network (NHSN) protocol of the Centers for Disease Control and Prevention (CDC) at Hospital Lifecenter, Hospital Madre Teresa and Hospital Universitário Ciências Médicas, tertiary care centers, which serve the metropolitan area of Belo Horizonte, Brazil.
- The data were collected between Jan/2017 and Dez/2019.

Results

- In almost three years of study, the infection rate data were calculated with and without surveillance. The monthly analysis by clinic showed that the inclusion of post-discharge patients in the computed rates increases its value, but not significantly.

Table 1 - Surgical site infection: data with and without post-discharge surveillance. Hospital Lifecenter (Jan/ 2017 to Jul/2019): month-by-month analysis.

Month/Year	Amostra de cirurgias avaliadas	Patients with surgical site infection	Surgical site infection: data WITH post-discharge surveillance	Cases diagnosed in the surveillance	Surgical site infection: data WITHOUT post-discharge surveillance
Jan/2017	534	11	2.1%	8	0.6%
Feb	502	9	1.8%	2	0.4%
Mar	602	12	0.8%	2	0.5%
Apr	522	18	3.4%	10	1.5%
May	566	13	2.3%	6	1.2%
Jun	538	9	1.7%	3	0.7%
Jul	548	10	1.8%	7	0.5%
Aug	645	16	2.5%	9	1.1%
Sep	616	7	1.1%	3	0.6%
Oct	619	6	1.0%	2	0.6%
Nov	609	8	1.3%	5	0.5%
Dec	557	16	2.9%	4	2.2%
Jan/2018	575	19	3.3%	14	1.0%
Feb	525	13	2.5%	7	1.0%
Mar	604	14	2.3%	7	1.2%
Apr	588	11	1.9%	6	0.9%
May	616	11	1.8%	0	1.8%
Jun	570	11	1.9%	7	0.7%
Jul	590	11	1.9%	6	0.8%
Aug	596	8	1.3%	3	0.8%
Sep	572	7	1.2%	2	0.9%
Oct	680	17	2.5%	9	1.2%
Nov	568	10	1.8%	4	1.1%
Dec	555	9	1.6%	3	1.0%
Jan/2019	527	14	2.7%	8	1.1%
Feb	597	18	3.0%	10	1.3%
Mar	471	14	3.0%	8	1.3%
Apr	554	26	4.7%	14	2.2%
May	558	13	2.3%	7	1.0%
Jun	558	13	2.3%	6	1.1%
Jul	583	14	2.4%	6	1.4%
Aug	581	13	2.2%	7	1.0%
Sep	571	13	2.3%	9	0.7%
Oct	584	10	1.7%	7	0.9%
Nov	564	9	1.6%	5	0.9%
Dec	595	13	2.2%	4	1.8%
Total	20,286	447	2.2%	192	1.1%

Table 2 - Surgical site infection: data with and without post-discharge surveillance. Hospital Madre Teresa (Jan/ 2017 to Dec/2019): month-by-month analysis.

Month/Year	Evaluated surgeries	Patients with surgical site infection	Surgical site infection: data WITH post-discharge surveillance	Cases diagnosed in the surveillance	Surgical site infection: data WITHOUT post-discharge surveillance
Jan/2017	1,111	14	1.3%	2	1.1%
Feb	936	14	1.5%	0	1.5%
Mar	1,053	13	1.2%	0	1.2%
Apr	910	7	0.8%	0	0.8%
May	1,069	12	1.1%	0	1.1%
Jun	1,000	14	1.4%	0	1.4%
Jul	1,004	14	1.4%	0	1.4%
Aug	1,053	7	0.7%	0	0.7%
Sep	916	9	1.0%	0	1.0%
Oct	989	11	1.1%	0	1.1%
Nov	1,000	12	1.2%	0	1.2%
Dec	869	10	1.2%	0	1.2%
Jan/2018	1,029	8	0.8%	0	0.8%
Feb	854	12	1.4%	2	1.2%
Mar	1,058	8	0.8%	1	0.7%
Apr	1,014	13	1.3%	3	1.0%
May	982	15	1.5%	2	1.3%
Jun	1,000	13	1.3%	3	1.0%
Jul	931	14	1.5%	4	1.1%
Aug	919	18	2.0%	0	2.0%
Sep	838	14	1.7%	0	1.7%
Oct	1,074	20	1.9%	0	1.9%
Nov	1,000	17	1.7%	0	1.7%
Dec	838	12	1.4%	0	1.4%
Jan/2019	1,084	18	1.7%	0	1.7%
Feb	958	20	2.1%	0	2.1%
Mar	883	9	1.0%	0	1.0%
Apr	1,000	17	1.7%	0	1.7%
May	1,056	12	1.2%	0	1.2%
Jun	833	8	1.0%	0	1.0%
Jul	679	11	1.6%	0	1.6%
Aug	911	10	1.1%	0	1.1%
Sep	887	15	1.7%	0	1.7%
Oct	691	3	0.7%	2	0.4%
Nov	1,000	11	1.1%	0	1.1%
Dec	481	3	0.6%	3	-0.6%
Total	29,770	382	1.3%	31	1.2%

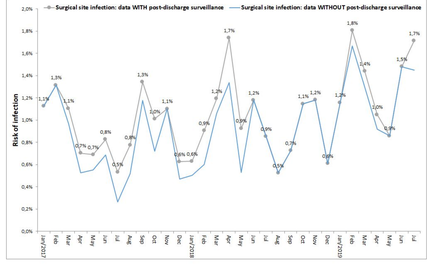
Table 3 - Surgical site infection: data with and without post-discharge surveillance. Hospital Universitário Ciências Médicas (Jan/ 2017 to Dec/2019): month-by-month analysis.

Month/Year	Evaluated surgeries	Patients with surgical site infection	Surgical site infection: data WITH post-discharge surveillance	Cases diagnosed in the surveillance	Surgical site infection: data WITHOUT post-discharge surveillance
Jan/2017	622	7	1.1%	0	1.1%
Feb	609	8	1.3%	0	1.3%
Mar	724	8	1.1%	1	1.0%
Apr	569	4	0.7%	1	0.5%
May	726	5	0.7%	1	0.6%
Jun	727	6	0.8%	1	0.7%
Jul	752	4	0.5%	2	0.3%
Aug	773	6	0.8%	2	0.5%
Sep	596	8	1.3%	1	1.2%
Oct	693	7	1.0%	2	0.7%
Nov	727	8	1.1%	0	1.1%
Dec	666	7	1.1%	1	0.9%
Jan/2018	795	5	0.6%	1	0.5%
Feb	664	6	0.9%	2	0.6%
Mar	755	9	1.2%	1	1.1%
Apr	748	13	1.7%	3	1.3%
May	757	7	0.9%	3	0.5%
Jun	679	8	1.2%	0	1.2%
Jul	705	6	0.9%	0	0.9%
Aug	763	4	0.5%	0	0.5%
Sep	689	5	0.7%	0	0.7%
Oct	786	9	1.1%	0	1.1%
Nov	762	9	1.2%	0	1.2%
Dec	697	4	0.6%	0	0.6%
Jan/2019	818	8	1.0%	0	1.0%
Feb	720	13	1.8%	1	1.7%
Mar	695	10	1.4%	1	1.3%
Apr	763	8	1.0%	1	0.9%
May	700	6	0.9%	0	0.9%
Jun	676	10	1.5%	0	1.5%
Jul	759	13	1.7%	2	1.4%
Total	22,000	229	1.0%	27	0.9%

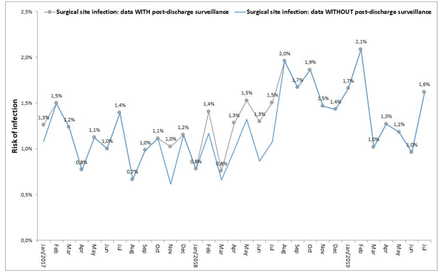
Conclusion

- The endemic curve with the infection rate did not change with the inclusion of post-discharge SSI.

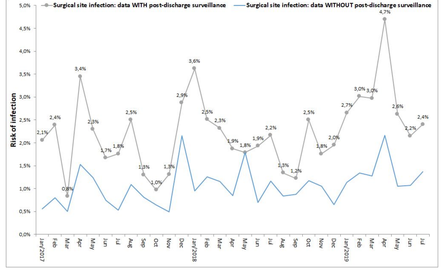
Graph 1 - Surgical site infection: rates with and without post-discharge surveillance. Hospital Lifecenter (Jan/2017 to Jul/2019).



Graph 2 - Surgical site infection: rates with and without post-discharge surveillance. Hospital Madre Teresa (Jan/2017 to Jul/2019)



Graph 3 - Surgical site infection: rate with and without post-discharge surveillance. Hospital Universitário Ciências Médicas (Jan/2017 to Jul/2019).



- Therefore, the study strongly suggests that surveillance after the discharge of the surgical patient is not necessary.