

Utilization of Intravenous Iron Preparations for Iron Deficiency Anemia: A Longitudinal Study Using a Japanese Health Insurance Claims Database with Annual Health Check-Ups in 2018-2021

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Objective

- Anemia is a common condition in Japan. In addition to orally administered iron preparations, the intravenous iron preparations, saccharated ferric oxide (SFO) or ferric carboxymaltose (FCM), can be prescribed in Japan.
- The objective of the study was to investigate patients’ iron need compared to the actual total dose infused with SFO and FCM.

Method

- A health insurance claims database with annual check-ups provided by DeSC Healthcare, Inc. (Tokyo, Japan) was used. The data period was from June 2018 to May 2021.
- The patients who had at least one SFO/FCM infusion were selected and the distributions of patients by number of infusions were calculated.
- An episode was identified by the wash-out periods of 28 days before the first and after the last infusion. The index date was the first infusion date of each episode. The iron need was estimated using hemoglobin and body weight with the formula in the prescribing package insert and was compared with actual total dose infused.



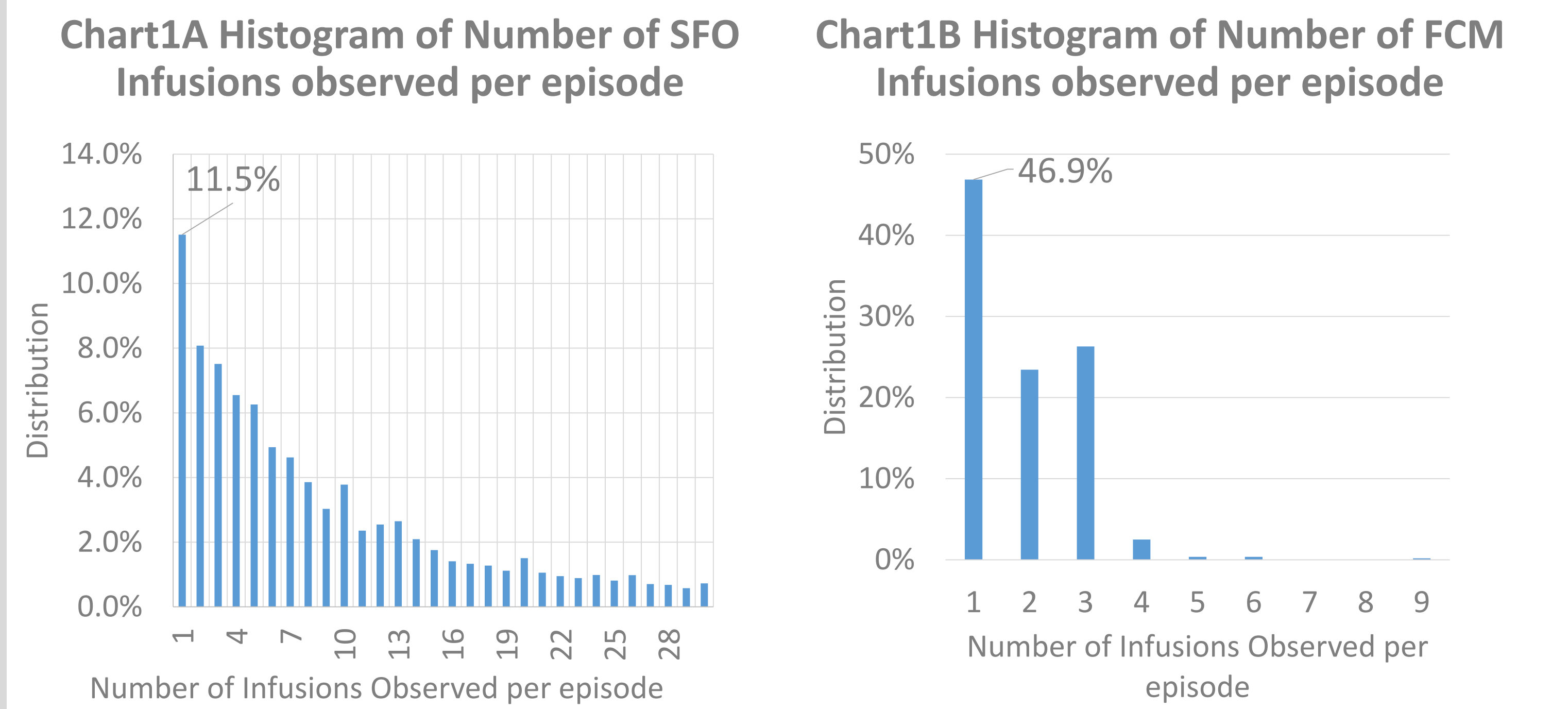
Results

- The dataset contained 1,227,909 infusions of SFO (of 83,712 patients) and 1,052 of FCM (of 559 patients). The demographic distributions are in Table 1.

Table 1 Demographics of SFO/FCM

	Number of infusions	Age as of infusions		% Female	Number of Patients
		Mean	Std. Dev.		
SFO	1,227,909	76.4	13.1	47.1%	83,712
FCM	1,052	68.0	20.6	71.3%	559

- 82% of SFO infusions were dosed at 40mg, and 15% at 80mg. All 1,052 FCM infusions were dosed at 500mg, and only one patient had 2 FCM infusions in one day.
- The average numbers of infusions of SFO/FCM per episode were 14.7 and 1.9, respectively. The distributions of patients by number of SFO/FCM infusions are in Chart 1. The proportions of the patients having just one infusion was 11.5% for SFO and 46.9% for FCM.



- We found 62,754 SFO and 399 FCM episodes among 1,227,909 SFO and 1,052 FCM injections. The distributions of the total dose per episode of SFO and FCM are in Table 2.

Table 2 Distribution of Dose Per Episode

	Number of Episodes	Total Dose Per Episode (mg)		
		Mean	Std. Dev.	Median
SFO	62,754	422	502	320
FCM	399	910	445	1,000

- Among 62,754 SFO and 399 FCM episodes, 588 SFO and 11 FCM episodes had hemoglobin and weight information within 30 days before the index. This information came from the annual health check-ups certified by the government which is why such a small portion of the episodes (588/62754 in SFO or 11/399 in FCM) had hemoglobin and weight information.
- For each of the episodes, the iron needed was estimated using hemoglobin and weight information and in Table 3a and b cited from the prescribing package insert.

Table 3a Total Iron Dose Needed of SFO in the Package Insert

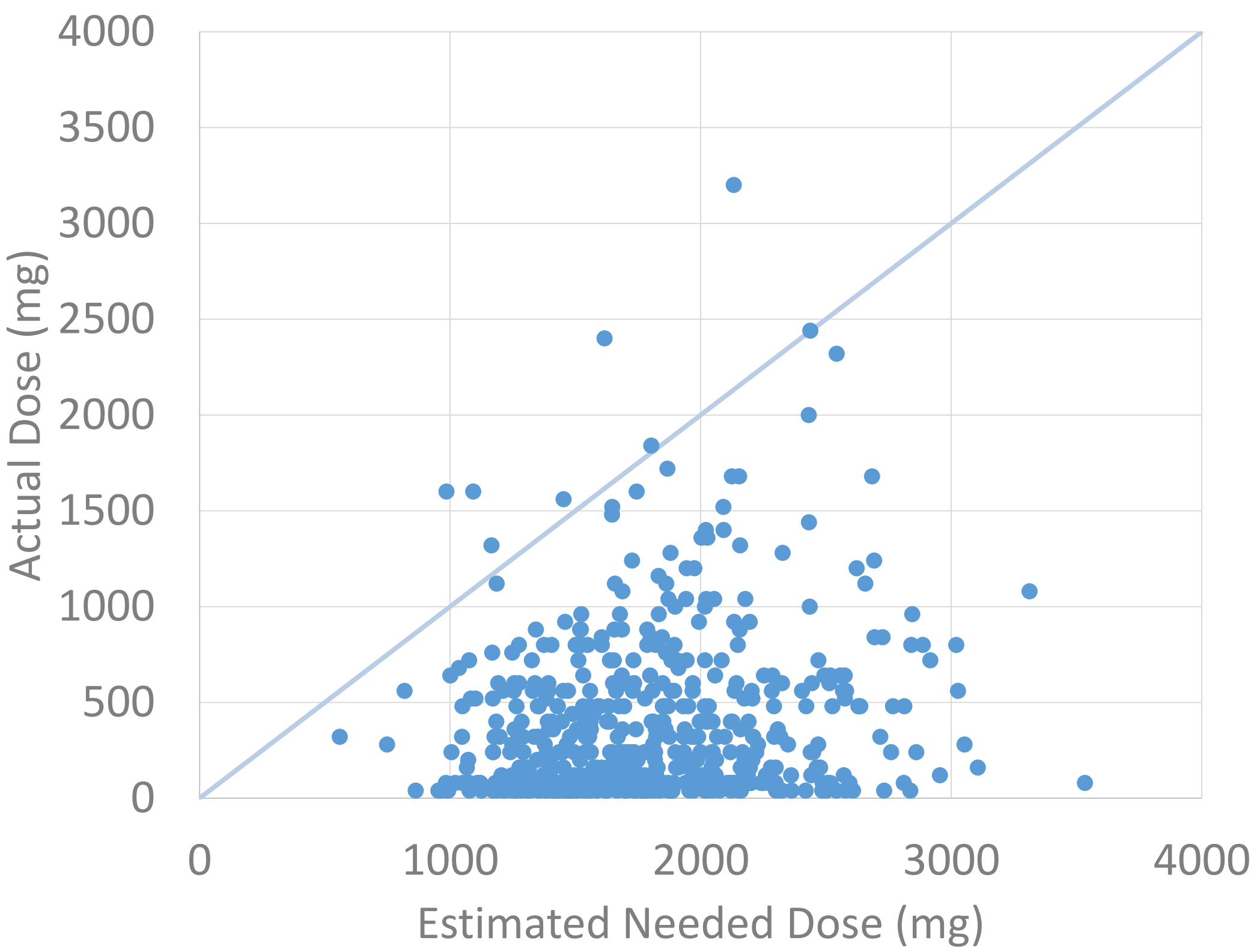
		hemoglobin (g/dL)								
		5	6	7	8	9	10	11	12	13
weight (kg)	20	940	880	830	780	720	670	610	560	500
	30	1410	1330	1240	1160	1080	1000	920	840	750
	40	1880	1770	1660	1550	1440	1330	1220	1120	1010
	50	2350	2210	2070	1940	1800	1670	1530	1390	1260
	60	2820	2650	2490	2330	2160	2000	1840	1670	1510
	70	3280	3090	2900	2710	2520	2330	2140	1950	1760

Table 3b Total Iron Dose Needed of FCM in the Package

		hemoglobin (g/dL)	
		<10	10+
weight (kg)	25-35	500	500
	35-70	1500	1000
	70+	1500	1500

- Of these, 580 (98.6%) for SFO and 4 (36.4%) for FCM had actual infused amounts less than the estimated iron need. Chart 2 shows the relationship between the actual amount and the estimated amount needed for each of the 588 SFO episodes.

Chart 2 Comparison Between Actual Infused Amounts and Estimated Amount Needed of SFO (each point represents an episode)



Conclusion

- In many Japanese patients, infused amounts of intravenous iron preparations are lower than the recommended amounts. More investigation as to the reasons for this finding is warranted as this identifies a quality of care issue.