

IV Iron Treament Episodes among US Patients with Iron Deficiency Anemia

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Background

Iron deficiency anemia (IDA) affects approximately five million people in the United States and has a significant impact on human health.¹ In a study of 2.3 million health plan members, anemia was observed in 3.5% of the population and those members had 54% higher annualized costs per patient compared to non-anemic patients.² Although oral iron is generally recognized as first-line therapy there is evidence that intravenous (IV) iron is superior in both efficacy and safety to oral iron.³ Several IV iron products are available, including older generation (iron sucrose, iron dextran, and sodium ferric gluconate) and newer generation (ferric derisomaltose, ferric carboxymaltose, and ferumoxytol) products. Newer agents have been shown to better maintain target hemoglobin concentration as well as protect against recurrent events due to anemia.^{4,5} Despite the benefits, some payors require failure on older iron products before use of newer iron products in prior authorization processes.

Currently available IV iron replacement regimens requiring multiple infusions (Figure 1) have been associated with suboptimal adherence.⁶ The need for multiple IV administrations imposes a burden on patients and healthcare delivery system which may result in discordance between actual IV iron administrations and product label. This discordance may require patients to undergo multiple retreatments in order to address their iron deficiency anemia.

Objective

Evaluate the number of six-week IV iron repletion episodes of care in commercially insured patients with iron deficiency anemia in the United States (US).

Methods

- This was a retrospective study using administrative claims data from patients enrolled in a regional commercial health insurance plan
- The study included claims incurred between January 1, 2016, and December 31, 2019
- IV iron therapy treatment episodes were defined as all infusions that occurred within six weeks of the initial infusion
 - ° Patients can have more than one episode of care; a new episode will start with each infusion more than six weeks from the start of the previous episode (Figure 2)
- This was a descriptive study which reported means for continuous variables and count and percent for categorical variables
- Patients were grouped according to IV iron product generation:
 - ° Older generation (iron dextran, iron sucrose, sodium ferric gluconate)
 - ° Newer generation (ferumoxytol, ferric carboxymaltose)

Inclusion Criteria

- A paid claim for therapy with an older or newer generation IV iron product
 - ° Note that ferric derisomaltose was not approved for use in the United States during the study period
- A diagnosis of iron deficiency anemia in the baseline period (12 months prior to the initial IV iron infusion)
- Age at least 18 years as of the index date
- Continuous enrollment with both medical as well as pharmacy insurance coverage in the baseline period as well as the 12 months (inclusive) following the index date (follow-up period)

Exclusion Criteria

- A claim for hemodialysis at any point during the study period (baseline + follow-up)

Patients who utilized older generation intravenous iron products required a greater number of six-week courses of therapy than did patients who used newer generation products

Figure 1: Dose and Frequency by IV Iron Product⁷

Product	Recommended Dose	Visits Needed for ≥ 1,000 mg
Iron dextran	100 mg after 25 mg test dose	
Ferric gluconate	125 mg	
Iron sucrose	200 - 300 mg	
Ferumoxytol	510 mg	
Ferric carboxymaltose	750 mg	

Figure 2: Episodes of Care Example



Results

Table 1: Demographics

		Older	Newer
<i>n</i>		10,546	14,190
Age Group n (%)	18 - 30	1,143 (10.8%)	1,327 (9.4%)
	31 - 40	2,394 (22.7%)	2,758 (19.4%)
	41 - 50	3,369 (31.9%)	4,754 (33.5%)
	51 - 64	3,234 (30.7%)	4,762 (33.6%)
	65+	406 (3.8%)	589 (4.2%)
Age	(mean)	45.7	46.8
Gender n (%)	Female	8,990 (85.2%)	12,109 (85.3%)
Deyo-Charlson Comorbidity Index (D-CCI) n (%)	0	5,326 (50.5%)	7,047 (49.7%)
	1	1,922 (18.2%)	2,744 (20.5%)
	2	1,069 (10.1%)	1,486 (10.5%)
	3+	2,229 (21.1%)	2,913 (20.5%)
D-CCI	(mean)	1.59	1.59

Table 2: Average Number of Six-Week Treatment Episodes

Older	Newer
1.73	1.32

Table 3: Count of Six-Week Treatment Episodes

Episodes	Older	Newer
1	6,386 (60.6%)	10,966 (77.3%)
2	2,457 (23.3%)	2,392 (16.9%)
3	834 (7.9%)	552 (3.9%)
4+	869 (8.2%)	280 (2.0%)

- There were 24,736 patients included in this study
- Baseline demographics were similar between the two cohorts (Table 1)
- Patients receiving older generation iron products had more six-week episode of care than did those receiving newer generation products (1.73 vs 1.32, respectively; Table 2)
- There were four times as many patients on older generation IV iron products that received four or more six-week episodes of care in the follow-up period (8% vs 2%, respectively; Table 3)

Conclusions

A previous study⁸ has shown that patients receiving the older, lower dose IVI products are much less likely to receive an iron dose of at least 1,000 mg. This study shows that the older IV iron products are also associated with an increase in the number of courses of therapy provided to patients. Additional courses of therapy may lead to increased logistical burden on both patients as well as infusion centers; therefore, restrictive health plan policies requiring steps through older generation products may worsen this burden.

Limitations

- This study utilized paid administrative claims data. Services performed but not billed are not included in the data
- This study was limited to patients enrolled in commercial health plans and may not be directly applicable to other insurance types such as Medicare or Medicaid

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