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POSTER ABSTRACTS

901.HEALTH SERVICES AND QUALITY IMPROVEMENT - NON-MALIGNANT CONDITIONS

Hematology Electronic Consultation As a Means for Effective Management of Iron Deficiency Anemia

Hannah King, DO[1], *Genevieve Benedetti, MD MPP*[1], *Joseph J. Shatzel, MD*[2], *Thomas G Deloughery, MD*[3], *Kylee L Martens, MD*[4]

[1] Department of Medicine, Oregon Health and Science University, Portland, OR
[2] Division of Hematology and Medical Oncology, Oregon Health & Science University, Portland, OR
[3] Division of Hematology and Medical Oncology, Oregon Health and Science Univ., Portland, OR
[4] Division of Hematology and Medical Oncology, Oregon Health and Science University, Portland, OR

Introduction: The use of non-visit electronic consultation (e-consult) can improve patient access to hematology care when an urgent in-person evaluation is not required. Prior studies have confirmed that e-consults have been rapidly adopted in certain settings, can resolve queries without the need for in-person follow-up, and, in turn, lead to an increase in total consult volume institutionally. Iron deficiency is a common reason for e-consult, however utilization trends, the efficacy and safety of iron repletion in this context, and the avoidance of face-to-face hematology consultation remain largely unknown.
Methods: We performed a descriptive and retrospective electronic chart review of patients referred for iron deficiency or iron deficiency anemia from 1/2018 - 1/2020 at our single institution. Baseline patient demographics, underlying etiology of iron deficiency, pregnancy status, baseline and follow up laboratory values pre- and post-receipt of iron, type of iron formulation, and adverse events were obtained from detailed review of electronic medical records. Iron deficiency was defined as ferritin $\leq$ 50μg/L. The primary outcomes of interest included time to e-consult order placement to formal hematologist recommendation and time to intravenous (IV) iron infusion. Secondary outcomes included recurrence of iron deficiency, repeat e-consult, conversion to in-person evaluation, and whether the etiology of iron deficiency was appropriately assessed. We defined appropriate etiology assessment as either: 1) a determined etiology documented within the note of the requesting provider or by the hematology consultant, or 2) if evidence of workup to determine etiology had been recommended and initiated
Results: A total of 180 e-consults for iron deficiency were reviewed over the 2-year study period. A summary of patient characteristics is included in Table 1. The median age of those referred was 40 years (interquartile range (IQR) 29-54). Sixty-eight percent of patients were Non-Hispanic White, 10% were Non-Hispanic Black, and there was a female predominance of 89%. Twenty-six percent lived outside the Portland metropolitan area. The most common attributed etiology of iron deficiency was uterine blood loss (27%), followed by gastrointestinal (17% blood loss, 13% malabsorption), and 7% of patients were pregnant at the time of e-consult placement. The most common IV iron formulations were low molecular weight iron dextran (43%) and ferumoxytol (30%), and adverse reactions were rare occurring in only 3.3% of patients. The median time from e-consult order placement to completion by hematology was 0.5 days (IQR 0-1) and from initial evaluation to IV iron infusion was 20 days (IQR 12-35) (Table 2). The median time of ferritin lab follow-up was 60 days when ordered by primary care provider and 37 days when ordered by hematology. Labs pre- and post-iron repletion rose from mean ferritin of 19.3 μg/L (standard deviation (SD) 33.1) to 166.9 μg/L (SD 127.2) and hemoglobin 11.7 g/dL (SD 1.8) to 12.7 g/dL (SD 1.6). Recurrence occurred in 58% of patients, and 13% of consults required in-person evaluation. The primary etiology was addressed in 45% of consults.
Conclusion: The results from this analysis demonstrate that e-consults permit efficient and safe management of iron deficiency, improve access to hematology care, and generate cost savings for the healthcare system. With the growing utilization of e-consults for iron deficiency evaluation and management, wait times to initial hematology evaluation may improve while access to care is simultaneously increased. Future quality improvement efforts, such as standardizing note templates to document suspected etiology and automating follow-up labs at the time of iron infusion, should be considered to expedite appropriate workup, reduce risk of incomplete repletion and recurrence of iron deficiency, and optimize educational opportunities for ordering providers.

Disclosures Shatzel: *Aronora Inc.:* Consultancy.

Table 1: Patient Characteristics

Variable	Total (n=180)	
Age, years (median, IQR)	40	29 – 54
Sex (N, %)		
Female	161	89.4%
Male	17	9.4%
Other	2	1.1%
Race/ethnicity (N, %)		
Non-Hispanic White	122	67.8%
Non-Hispanic Black	18	10.0%
American Indian/Alaska native	6	3.3%
Asian	11	6.1%
Hispanic	11	6.1%
Other/Unknown	12	6.7%
Region[a] (N, %)		
Portland Metro Area	133	73.9%
Outside Metro Area	47	26.1%
Attributed Etiology (N, %)		
Uterine	49	27.2%
GI – Blood loss	30	16.7%
GI – malabsorption	23	12.8%
Pregnancy	12	6.7%
Other	8	4.4%
Unknown	58	32.2%
Baseline laboratory values (mean, SD)		
Ferritin (µg/L)	19.3	33.1
Hgb (g/dL)	11.7	1.8

Abbreviations: IQR, interquartile range; metro, metropolitan; SD, standard deviation; Hgb, hemoglobin
[a]Portland metro area includes Portland, OR, Vancouver, WA, Gresham, OR, Hillsboro, OR, Beaverton, OR

Table 2: E-consult completion characteristics and patient outcomes

Variable		
E-consult (median, IQR)		
Days from order to recommendation	0.5	0 – 1
Days from order to IV iron	20	12 – 35
Days from iron receipt to ferritin check (mean, IQR)	43	30 – 90
Post-Iron laboratory values (mean, SD)		
Ferritin (µg/L)	166.9	127.2
Hgb (g/dL)	12.7	1.6
Type of Iron Formulation (N, %)		
Low molecular weight iron dextran	78	43.3%
Iron sucrose	7	3.9%
Ferumoxytol	54	30.0%
Ferric carboxymaltose	4	2.2%
Oral iron	10	5.6%
Adverse infusion reaction (N, %)	6	3.3%
Secondary outcomes of interest (N, %)		
Etiology addressed	81	45.0%
Recurrence	104	57.8%
In-person evaluation	24	13.3%
Repeat e-consult	48	26.7%

Abbreviations: e-consult, electronic consultation; IQR, interquartile range; SD, standard deviation; Hgb, hemoglobin

Figure 1

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