

Improving Anemia Management With Less Frequently Dosed Erythropoiesis Stimulating Agents

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BACKGROUND

- Erythropoiesis stimulating agents (ESAs) are effective agents for increasing hemoglobin levels in patients with moderate to severe chronic kidney disease who are undergoing dialysis.
- The process of delivering ESAs to patients receiving hemodialysis is complex, and many European countries now require dialysis centres to document this process. To date, the operational aspects and costs of ESA delivery in Europe have not been described comprehensively.

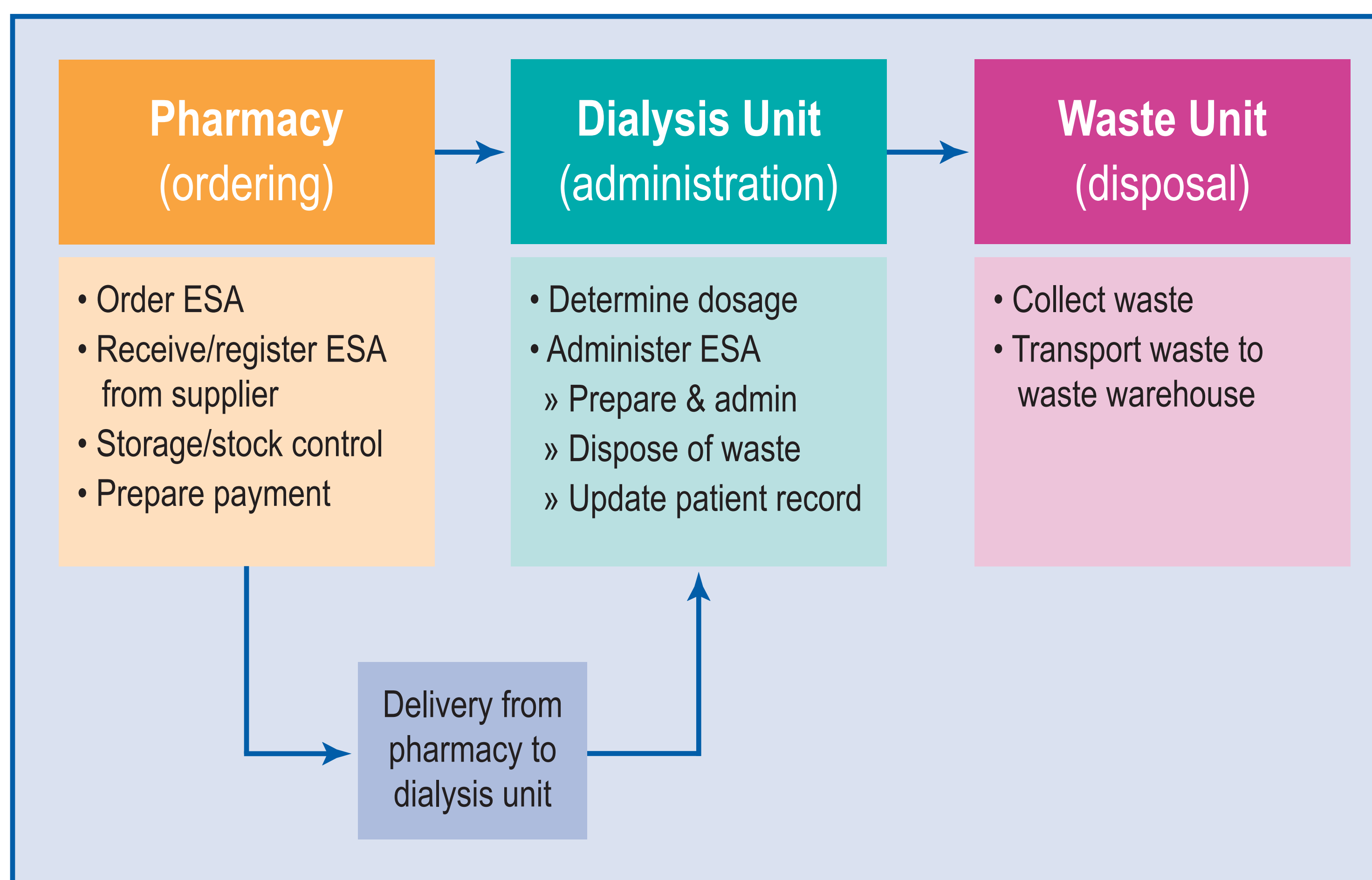
OBJECTIVE

- The objective of this study was to describe the entire process of ESA delivery in dialysis centers. In addition, we investigated whether cost savings are possible with less frequent dosing.

METHODS

- A conceptual model was developed to classify the subprocesses for delivering ESAs that are routinely followed in the pharmacy, dialysis unit, waste unit and back office.
- Figure 1 shows the process flow of ESA delivery to patients undergoing dialysis. In the pharmacy and dialysis unit, we recorded the time required for each of these activities as well as the amount of time and materials associated with waste disposal activities and back office activities.

Figure 1. Process Flow Diagram – ESA Delivery in Dialysis

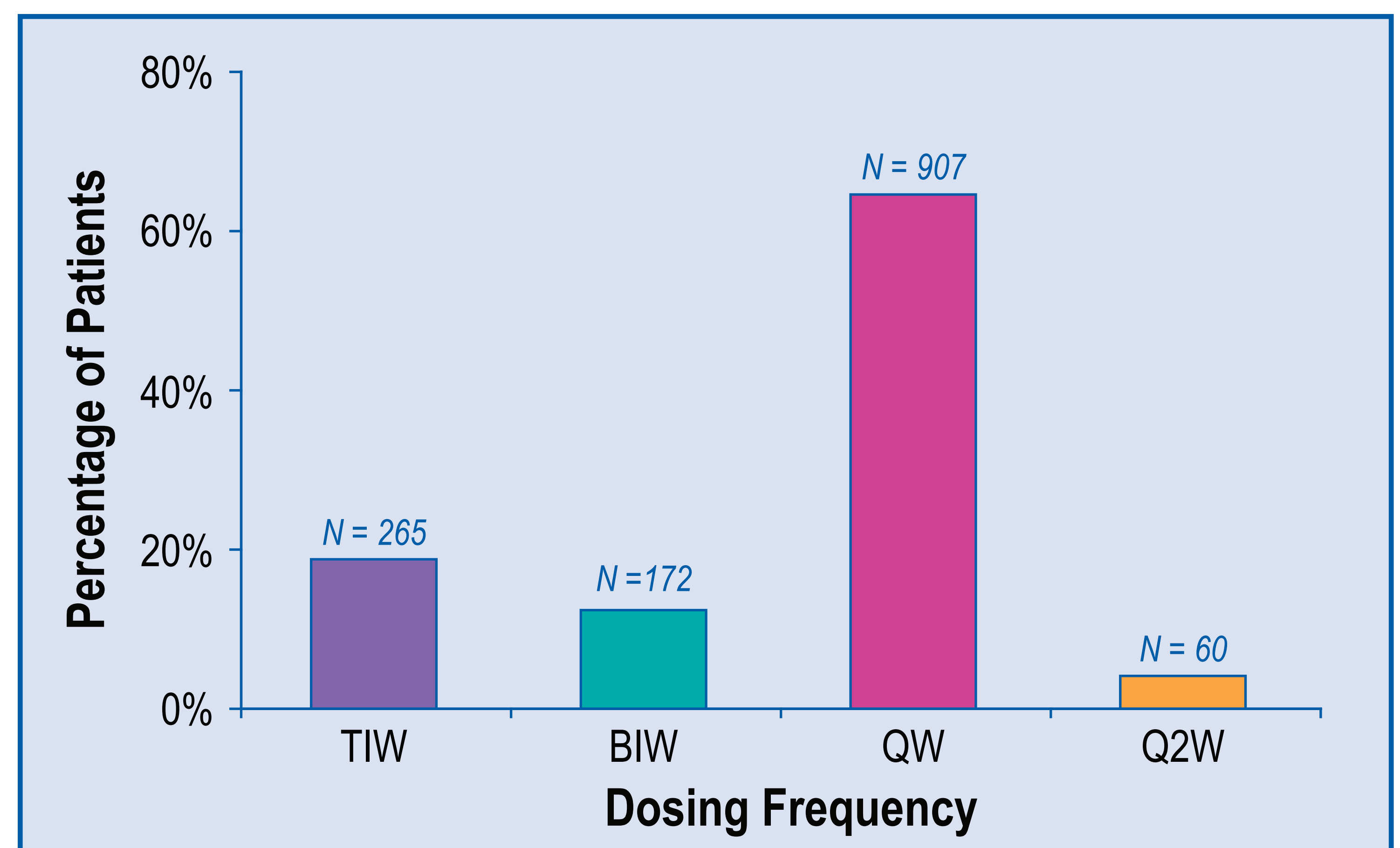


- We also examined the impact of less frequent dosing on the resources required to treat anemia with ESAs. Structured interviews with staff provided a comprehensive list of processes, sub-processes, and activities that are followed to order, register, and administer ESAs and dispose of waste. Each activity was evaluated to determine if less frequent dosing influenced the amount of resources required.
- A model was developed to estimate the change in resources consumed when using less frequent dosing regimens compared with the current practice of ESA administration.

RESULTS

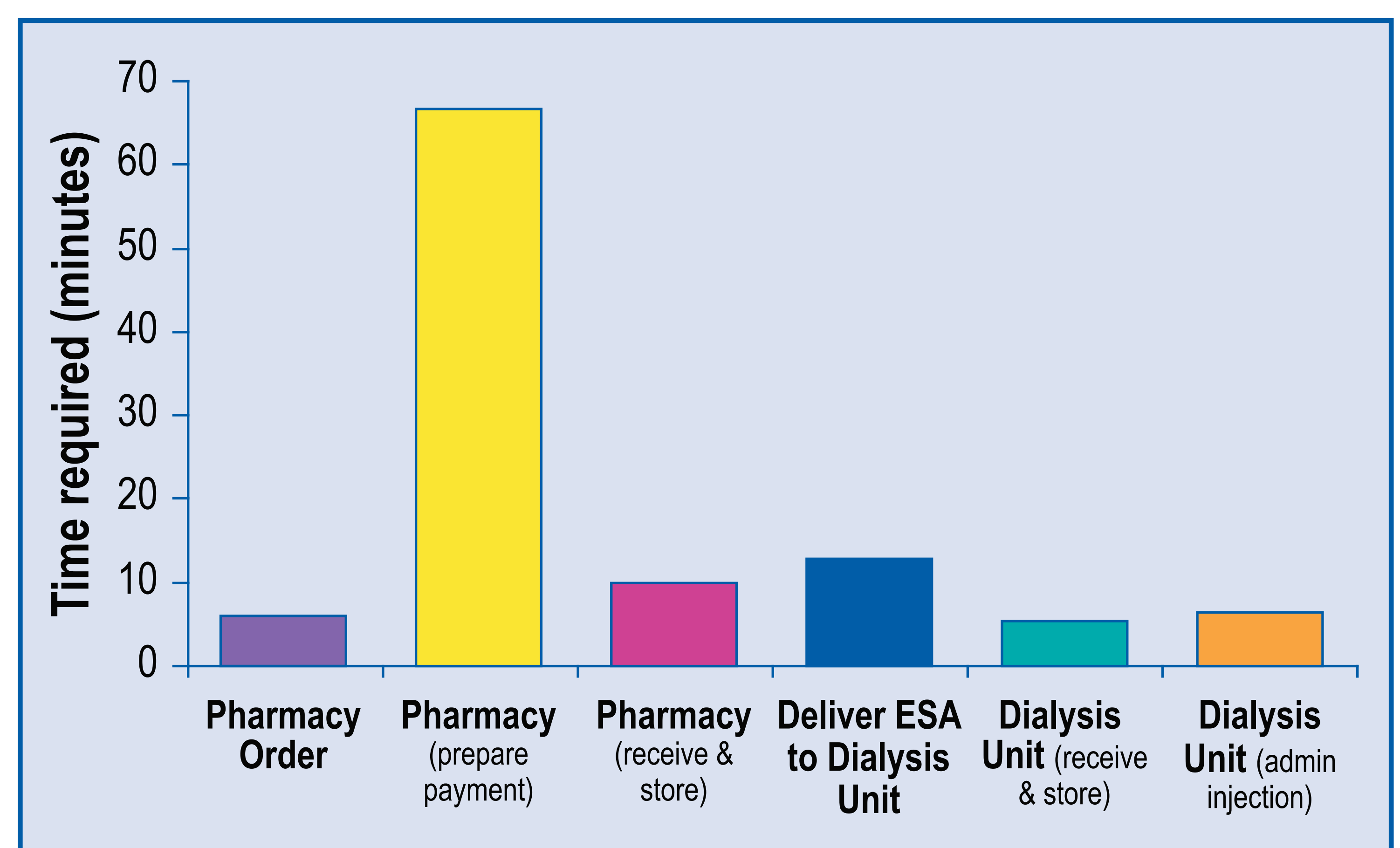
- Eight centers in five European countries participated in the study, and we were able to collect data for an average of 175 patients at each centre (range 42 -707 patients).
- Across all centers, patients received a variety of dosing regimens (eg TIW, BIW, QW, and Q2W). Most patients received a QW regimen (Figure 2).

Figure 2. Dosing Frequency in Patients With Chronic Kidney Disease Receiving ESAs to Treat Anemia



- Figure 3 shows the time required for a subset of the processes involved in ESA delivery. The most time-consuming task in the entire ESA delivery process is the time required by the pharmacy for preparing payment for the ESAs (mean \pm SD; 66.6 \pm 168.1 minutes). In the dialysis unit, administering injections required the largest proportion of time in the ESA delivery process (6.4 \pm 6.5) minutes.

Figure 3. Time Required for Various Processes and Subprocesses of ESA Delivery



- Our model estimates that switching from current dosing practices to Q2W could decrease the amount of time and resources required to deliver ESAs. For example, switching to Q2W could decrease the number of syringes used each year from 12,420 to 5,085. We also estimated a reduction in the number of disinfective tissues and liquids of 58% and 71%, respectively, by switching from current ESA dosing practice to dosing Q2W.

CONCLUSIONS

- These data demonstrate that there is substantial variation in the time it takes to perform routine ESA delivery activities in European dialysis centers.
- Less frequent dosing of ESAs could be associated with considerable time saving. We estimate that the resources required to treat patients with anemia could also be reduced by decreasing the frequency of ESA administration.

- Dosing ESAs less frequently to patients receiving hemodialysis could reduce the workload for health care professionals in the dialysis units. Saving time in delivering ESAs to patients undergoing hemodialysis means that nurses' time can be redirected to additional patient care.