

# Hydroxychloroquine usage in US patients, their experiences of tolerability and adherence, and implications for treatment: survey results from 3127 patients with SLE conducted by the Lupus Foundation of America

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## ABSTRACT

The majority of patients with SLE in the USA have been prescribed hydroxychloroquine (HCQ). Given more recent guidelines, the availability of only one strength (200 mg tablets) may limit the flexibility and ability to accurately dose patients with lupus. The Lupus Foundation of America undertook a survey to assess the current landscape of HCQ tolerability and adherence.

## INTRODUCTION

The majority of patients with SLE in the USA have been prescribed hydroxychloroquine (HCQ). Given more recent guidelines, the availability of only one strength (200 mg tablets) may limit the flexibility and ability to accurately dose patients with lupus. The Lupus Foundation of America (LFA) undertook a survey to assess the current landscape of HCQ tolerability and adherence.

## METHODS

In August 2018, an online patient survey of HCQ usage was conducted by the LFA. Patients accessed the survey via LFA's social media channels or patient registry. There were 3594 individuals who responded; 90% reported having been diagnosed with SLE, of whom 96% were female. Of these, 3127 were taking HCQ, and 2863 provided their current HCQ daily dose. Patients' weight was requested in order to calculate their recommended dose and compare this with their current daily dose. The recommended dose was calculated based on the American Academy of Ophthalmology (AAO) 2016 guidelines recommendation of not more than 5 mg/kg/day actual body weight. Patients were also asked about unwanted symptoms they

had reported to their doctor, gastrointestinal (GI) effects they had experienced and aspects affecting their adherence.

## RESULTS

The most commonly reported daily dosages of HCQ were 400 mg (50%) and 200 mg (34%). Thirteen per cent of the patients reported taking 300 mg/day via alternate-day dosing (400 mg/200 mg) or splitting tablets (1.5×200 mg tablets). Less than 3% of the patients reported taking doses <200 mg or >400 mg, and for this reason further analysis for these patients was not carried out. The AAO 2016 guidance suggested that the rates of HCQ retinopathy were higher than had previously been recognised.<sup>1</sup> The recommended dosage per the AAO 2016 guidelines was calculated for the 2696 patients who provided their body weight, and compared with their actual, current HCQ dose. Twenty-six per cent of the patients were on doses exceeding the AAO recommended maximum by more than 5%. This is similar to the rates found in recent US rheumatology centre audits.<sup>2-4</sup>

Patients were asked what unwanted symptoms, which they attributed to HCQ, had been reported to their doctor. Of 2783 who responded, 15% had reported a range of unwanted symptoms. This was similar across all daily doses of HCQ (200 mg/day: 16%; 300 mg/day: 15%; 400 mg/day: 13%). Fifty-six per cent of the 2783 patients responding had experienced GI problems which they attributed to HCQ (table 1).

Patients were asked about specific GI problems they had experienced from taking HCQ. They reported upset stomach (25%), stomach

**Table 1** HCQ adherence issues associated with different daily dosing schedules

Question	Do you experience any of the following when you take HCQ? I sometimes forget or mix up the dose of HCQ I am supposed to take each day.			Do you experience any of the following when you take HCQ? I notice a bitter taste from HCQ.		
	Yes	% Yes	P value	Yes	% Yes	P value
Dosage per day						
200 mg	131	13.6	<0.001	267	27.5	<0.001
1.5×200 mg	29	14.2	<0.001	98	47.6	
Alternate 200/400 mg	49	32.2		48	31.6	<0.01
400 mg	198	14.0	<0.001	357	25.2	<0.001

HCQ, hydroxychloroquine.

cramps (6%), diarrhoea (10%) and other GI symptoms (12%). More than one GI symptom was reported by 47% of patients, and this pattern was similar across the dosing groups. Despite 56% of patients experiencing GI problems, only 15% of patients had reported any unwanted symptoms to their physician. This suggests that an opportunity may exist for stronger clinician–patient communication regarding symptom management.

Adherence issues are common with HCQ<sup>5</sup> and potential reasons for this were examined in the survey. In particular, the impact of more complex dosing regimens and the bitter taste of HCQ were explored. Thirty-two per cent of the patients taking different alternate-day doses, 200 mg/400 mg, reported forgetting or mixing up their dose, significantly higher than seen in the other dosing bands where the same dose was taken each day (see table 1). This supports the hypothesis that alternating different doses on different days is harder to remember and causes more confusion than taking the same dose each day. Forty-eight per cent of patients taking 1.5×200 mg per day reported a bitter taste when taking HCQ, significantly higher than seen in the other dosing bands where only whole tablets were taken (see table 1). This is consistent with the fact that the tablet coating will not mask the bitter taste as effectively once the tablet is no longer intact.

## DISCUSSION

HCQ dosing is weight-based, and at present only 200 mg strength tablets are available. It can therefore be challenging to tailor the optimal dosage regimen for each patient. Furthermore, the need to tailor doses has increased since the AAO 2016 HCQ retinopathy guidance was published. Twenty-six per cent of the patients surveyed reported doses above 5 mg/kg/day actual body weight, and consequently some patients may require dose reduction. Currently, complex regimens with different doses on different days of the week or splitting tablets are required to deliver doses between 200 mg and 400 mg. Both of these dosing strategies have a negative impact

on adherence. Availability of new dosage forms of HCQ would provide greater flexibility to accurately tailor doses for individual patients, as well as potentially alleviate adherence issues associated with complex HCQ regimens.

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