



# African American Patients Derive Significant Benefit from the Dual DAA Therapy: A Real World Study in an Urban Medical Center

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## Introduction

African Americans (AA) in the US are twice as likely to be infected with HCV compared to the non-Hispanic-white US population (Caucasian; Cau) (3% vs. 1.5%), more likely to be genotype 1, more likely to develop HCC and in addition, have a lower response rate to approved IFN based therapies [1-6]. Racial disparity in response to hepatitis C treatments when comparing African Americans (AA) to Caucasians (Cau) was a disconcerting finding in the Interferon-Ribavirin treatment era. While the addition of a first generation direct acting anti-viral (DAA) resulting in a triple therapy (Interferon + Ribavirin + DAA) yielded an increased response rate compared to Interferon + Ribavirin alone, AA were still less likely than Caucasians to respond to triple therapy [5,6]. This racial disparity has been frustrating for the physicians who treat predominately African American population. The development of combination DAA therapies that did not rely on Interferon or Ribavirin appears to resolve that disparity. The objective of this study was to compare outcomes of combination DAAs to triple therapy in AA patients treated in a real world setting of an urban academic medical center GI practice.

## Methods

Data from the medical records of patients treated with a DAA from July 2011 to June 2016 were included in this IRB-approved study. Response rate to therapy with combination DAA or triple therapy was calculated as intent to treat (ITT), and sustained viral response (SVR) was defined as a negative HCV PCR assay 12 weeks after completion of therapy. AST-Platelet Ratio Index (APRI) was used to assess improvement in fibrosis following treatment. The triple therapy genotype 1 patient received one of three antivirals (telaprevir, boceprevir or sofosbuvir) with their Ribavirin and Interferon. The combination DAA patients received either ledipasvir/sofosbuvir or sofosbuvir/simeprevir.

## Results

The majority of the 371 patients were African American (89%) and Genotype 1 (96%) with a median age of 61 years. Combination DAAs were used in 72% of the genotype 1 patients with the remaining receiving triple therapy. The intent to treat SVR results for the genotype 1 patients are shown in Figure 1a. The SVR for AA Genotype 1 patients receiving combination DAA as compared to triple therapy was significantly better (96% vs. 49%; Pearson  $p < 0.001$ ;  $n = 140$  and  $84$  respectively). This was in contrast to Cau where the response rates were similar (100% vs. 91%  $p = ns$ ;  $n = 10$  and  $12$  respectively).

Fibrosis improvement at 12 weeks after the completion of therapy in the genotype 1 patients as defined by a change in the APRI is shown in Figure 1b. Fibrosis improved in AA and Cau patients who achieved an SVR as compared to patients who did not. When assessed by treatment rather than by race, there was also improvement (1.15 to 0.43 for combination DAA ( $p < 0.005$ ) and (0.69 to 0.44 for triple therapy ( $p < 0.001$ )).

The six patients who failed combination DAA were either non-compliant/terminated early (3), experienced non-responders who failed despite compliance (2) or had hepatocellular carcinoma suspected prior to start of therapy (1). Of the 44 patients who failed triple therapy, 15 were subsequently successfully retreated with combination DAA and 2 were not successfully retreated. An additional 14 were waiting for treatment with combination DAA and 13 were lost to follow up or had incomplete information regarding retreatment.

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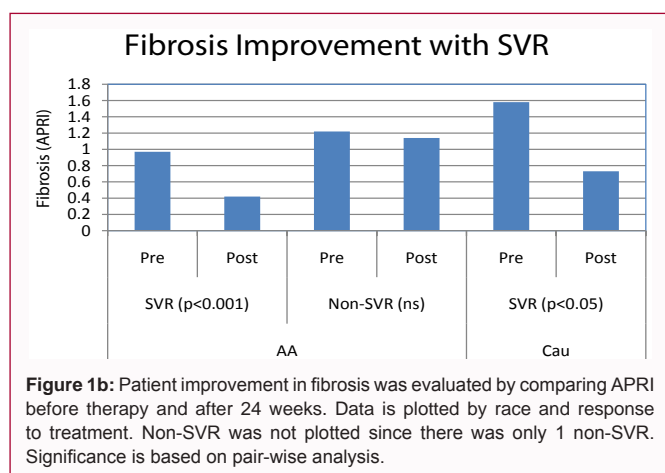
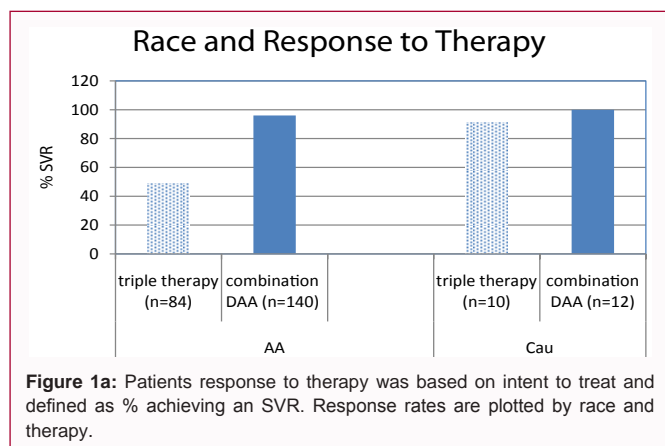
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There were more naïve patients in the combination DAA group as compared to the triple therapy group (47% vs. 26% (AA); 54% vs. 13% Cau, respectively). There were also more cirrhotic patients treated with combination DAA than triple therapy. As shown in Table 1, combination DAA treatment was superior to triple therapy regardless of previous treatment or cirrhosis. The data also suggests that while AA patients with cirrhosis had an improved response with combination DAA as compared to triple therapy, there was still a lower efficacy for triple therapy (96% vs. 91%).

**Conclusion**

Using agents that directly target HCV replication and do not rely on host factors as did interferon based therapy, resulted in similar high response rates in both Caucasians and AA patients with hepatitis C. Based on the studies reported here and in the recent literature, it is reasonable to council AA patients that response rates with combination DAA are greater than 95% and that this can be achieved with oral therapy and minimal side effects. These success rates also appear independent of compensated cirrhosis and previous treatment failure. While response rates are achieved with shorter therapy, suggesting that these are powerful anti-virals and the side

**Table 1:** Response (%SVR) by Sub-Sets of Patients.

		IR+DAA	DAA
AA	Experienced	55%	95%
	Naïve	43%	96%
Non-AA	Experienced	83%	100%
	Naïve	100%	100%
AA	Cirrhosis	18%*	91%
	No Cirrhosis	53%	96%
Non-AA	Cirrhosis	100%	100%
	No Cirrhosis	90%	100%
*p<0.05			

effects minimal, compliance remains a key component for efficacy. Thus, these studies confirm that racial disparity in response to HCV therapy has been eliminated by the use of combination DAA without interferon and ribavirin. Achieving an SVR with DAA therapy is accompanied by a rapid improvement in fibrosis in AA patients as well as in AA patients who failed triple therapy and were successfully retreated with combination DAA.

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