

INTRODUCTION

Long term results of HCC liver transplants (LTx) in the recent era of direct-acting antivirals (DAA) against hepatitis C (HCV) are not available.

- ❖ We aimed to examine the access, treatments and cure rates with DAA's utilized in HCC LTx with HCV.
- ❖ Secondly, we aimed to determine the long term impact of the Liver Cancer Program and DAA therapies on survival of HCC LTx.

METHODS

A retrospective analysis of 4 eras of transplantation for HCC/HCV LTx at a single center:

Dec 1996- July 2015: 1,368 patients

- ❖ Era 1 ('97-2001)
- ❖ Era 2 (2002-06)
- ❖ Era 3 (2007-10)
- ❖ Era 4 (2011-15)

In 2011, utilization of first generation DAA's began, as well as a fully revamped liver cancer program.

By 2012, second generation DAA's were used. All eras were examined for patients that died prior to reaching DAA's (Era 4). Era 1 to 4 had 2, 20, 47 and 67 HCC/HCV patients, respectively.

All DAA treatments in this study were post liver Tx. Kaplan Meier methodology, Log rank and Chi-square was utilized

Table 1. Evolution of HCV Treatments and DAA's

Drug	Approval
Interferon	1991
Pegylated Interferon	2001
Telaprevir / Boceprevir	2011
Sofosbuvir / Simeprevir	2013
Daclatasvir, Elbasvir, Ledipasvir, Ombitasvir, Velpatasvir, Dasabuvir	2014-2016

RESULTS

136 HCC/HCV liver TX and 233 HCC liver TX

Table 2. Available to be treated

Era	Yes	No	Total
Era 1	0	2	2
Era 2	10	10	20
Era 3	41	6	47
Era 4*	67	--	67

More patients Era 3 (41/47=87%) vs. Era 1 and 2 (10/22= 45%) were able to reach the DAA era (**p= 0.0002**).

*Era 4 is the DAA era. All patients are available to be treated.

Table 3. Treated Patients with DAA's

Era	Yes	No	Total
Era 1	0	0	0
Era 2	2	18	20
Era 3	8	39	47
Era 4	22	45	67

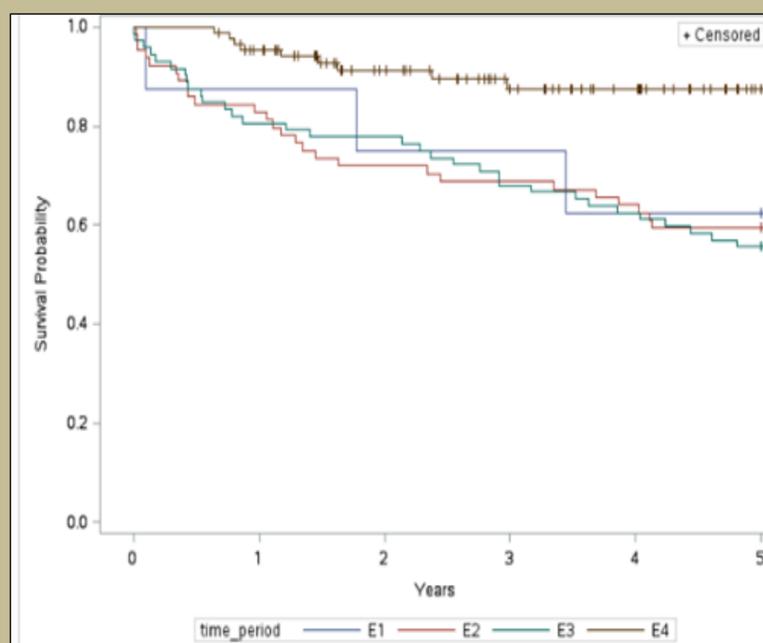
More patients in Era 4 (22/67=32.8%) were treated with DAA's than in Era 3 (8/47=17.7%) and in Era 2 (2/20= 10%, **p= 0.04**). [Era 3 vs 4, p=0.059].

Table 4. Patients Cured

Era	Yes	No
Era 1	--	--
Era 2	2	18
Era 3	7	47
Era 4	22	67

More patients were cured in Era 4 (22/67= 32.8%) vs. Era 3 (7/47=14.8% , **p=0.03**).

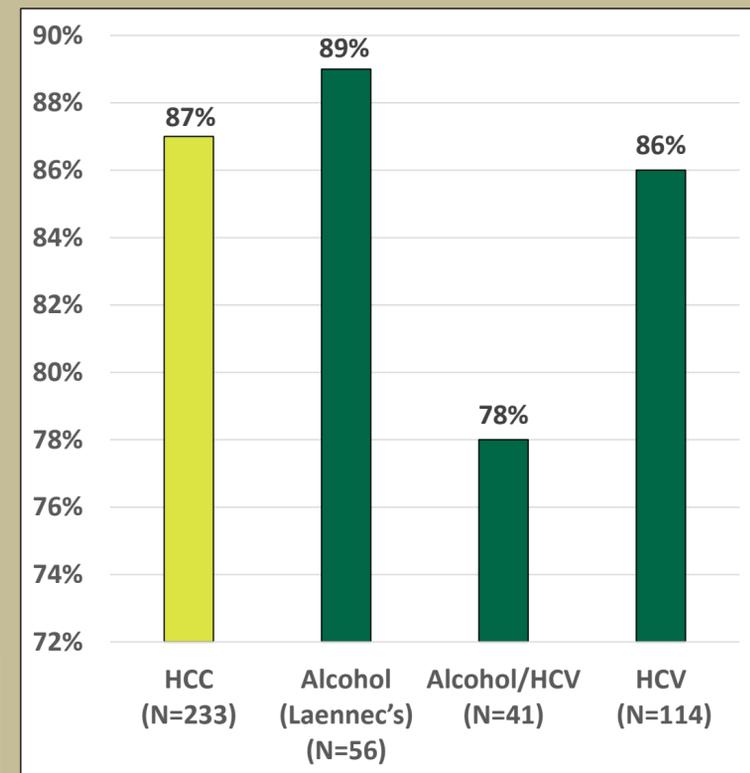
Figure 1. Impact on Overall Cohort of HCC Liver Tx



p=0.0018	Era 1	Era 2	Era 3	Era 4
N	8	64	72	89
5 yr Surv	62.50%	59%	55.60%	87.30%

The 3-year survival of 89 patients in Era 4 was 87.3% compared to 68% for Era 3. Forty-nine patients have already reached that endpoint.

Figure 2. 3 Year Survival Compared to other Populations



Kaplan Meier 3 year survival rates of the HCC population compared with Alcohol (Laennec's), Alcohol/HCV, and HCV.

CONCLUSION

The superiority of Era 4 HCC liver Tx is impressive, with a 19% survival improvement. Decay after the first year was only 3.8% / year. This era coincides with the beginning of DAA's and the revamped liver cancer program, both significantly improving survival. Contributions from Hepatitis C therapies on overall survival of HCC LTx are unquestionable. One third of HCV infected HCC patients were treated and cured. All (100%) were cured since 2011. However, other factors in the liver cancer program also contributed: better bridge therapies, adjuvant therapies, patient selection, among others. Hepatocellular carcinoma liver Tx recipients are outperforming other liver Tx recipients, and are comparable to HCV alone.