Investigate washout

Some studies have washout, which can mean different things for different studies.

These are all the studies that are labeled as having washout:

```
kable(df %>% filter(WashOut == 'Y') %>%
  select(JournalVolumePage, Author, Year, subtype, TypesofMIGSifany))
```

JournalVolumePage	Author	Year	subtype	TypesofMIGSifany
JCRS, 36(407-412)	Fea et. al	2010	OAG	NA
JCRS, 36(407-412)	Fea et. al	2010	OAG	iStent
AAO, 118(459-467)	Samuelson et al.	2011	OAG	NA
AAO, 118(459-467)	Samuelson et al.	2011	OAG	iStent
AAO, 122(1283-1293)	Pfeiffer et al.	2015	OAG	NA
AAO, 122(1283-1293)	Pfeiffer et al.	2015	OAG	Hydrus Microstent
Lancet, 388(1389-1397)	Azuara-Blanco et al.	2016	ACG	NA
O, 123(2103-2112)	Vold et al.	2016	OAG	NA
O, 123(2103-2112)	Vold et al.	2016	OAG	Cypass

This study has pre- and post-washout and no measurements without washout. This is equivalent to setting the pre and post op meds to 0:

```
kable(df %>% filter(Washoutbaseline == PreOpIOPMean, !is.na(WashoutIOP)) %>%
  select(JournalVolumePage, Author, Year, TypesofMIGSifany))
```

JournalVolumePage	Author	Year	TypesofMIGSifany
O, 123(2103-2112)	Vold et al.	2016	NA
O, 123(2103-2112)	Vold et al.	2016	Cypass

This study has preop washout and no washout in the post period. Virgin patients were enrolled, and had 0 pre-op meds; only after were they put on meds:

```
kable(df %>% filter(Washoutbaseline == PreOpIOPMean, is.na(WashoutIOP)) %>%
  select(JournalVolumePage, Author, Year, TypesofMIGSifany))
```

JournalVolumePage	Author	Year	TypesofMIGSifany
Lancet, 388(1389-1397)	Azuara-Blanco et al.	2016	NA

These studies had both washout and regular measurements in the pre-period. That tells us about the relationship between meds and IOP:

```
kable(df %>% filter(Washoutbaseline != PreOpIOPMean) %>%
  mutate(mm.Hg.per.med = (Washoutbaseline - PreOpIOPMean)/RxPreOpMean,
         rel.p = 100*(1-(Washoutbaseline - PreOpIOPMean)/Washoutbaseline),
         rel.p.drop.per.med =
           100*(1-exp(log(rel.p / 100) / RxPreOpMean))) %>%
  select(Author, Year, PreOpIOPMean, RxPreOpMean, mm.Hg.per.med,
         rel.p, rel.p.drop.per.med), digits = 2)
```

Author	Year	PreOpIOPMean	RxPreOpMean	mm.Hg.per.med	rel.p	rel.p.drop.per.med
Samuelson et al.	2011	18.0	1.5	5.00	70.59	20.72
Samuelson et al.	2011	18.7	1.5	4.33	74.21	18.04
Pfeiffer et al.	2015	18.9	2.0	3.85	71.05	15.71
Pfeiffer et al.	2015	18.6	2.0	3.85	70.72	15.90
Neiweem et al.	2016	19.9	2.4	1.88	81.56	8.14

Most commonly, 1 med corresponds to about a 15-20% drop in IOP; or a 4-5 mmHg drop.

This study has washout only in the last period; we can also use this to estimate the drop in IOP per med:

```r
kable(df %>% filter(regexpr("Fea", Author)==TRUE) %>%
  mutate(mm.Hg.per.med = (WashoutIOP - LastPeriodIOPMean)/RxPostOpMean,
         rel.p = 100*(1-(WashoutIOP - LastPeriodIOPMean)/WashoutIOP),
         rel.p.drop.per.med = 100*(1-exp(log(rel.p / 100) / RxPostOpMean))) %>%
  select(Author, Year, LastPeriodIOPMean, RxPostOpMean, mm.Hg.per.med,
         rel.p, rel.p.drop.per.med), digits = 2)
```

Author	Year	LastPeriodIOPMean	RxPostOpMean	mm.Hg.per.med	rel.p	rel.p.drop.per.med
Fea et. al	2010	15.7	1.3	2.69	81.77	14.34
Fea et. al	2010	14.8	0.4	4.50	89.16	24.94

This study is also in line with the estimate of 4-5mmHg, 15-20% drop in IOP per med.

Loose ends

- Neiween: the IOP drop per med – double check these numbers.

- Pfeiffer: I don't understand why the numbers for washout preop don't match with PreOpIOPmean, implying that we have both washout and natural for preop period, yet they match in the second washout period. If there's only washout in the pre-period, remove the numbers from the second washout period column.