

5HVSQRQVH WR ,PDWLQLE 0HV\ODWH LQ 3DWLH  
0\HORLG /HXNHPLD DQG 'HULYDWLYH &KURPRV

0RKDPPDG 8VPDQ 6KDUNK 0RDVWHHUQ 1DJ 6DVG DVKDCDOPDQ 1DVHHP \$GLO  
'HSDUWPHQW RI 3DWKRORJ\ DQG 0LFURELRORJ\ 6HFWLRQ RI +HPDWRORJ\ 7KH \$JD .KDQ 8QLYHUVLW\ +R  
'HSDUWPHQW RI 0ROHFXODU 3DWKRORJ\ 6HFWLRQ RI 0ROHFXODU 3DWKRORJ\ 7KH \$JD .KDQ 8QLYHUVLW\ +R  
'HSDUWPHQW RI 3DWKRORJ\ .LQJ 6DXG ELQ \$EGXO \$JLJ 8QLYHUVLW\ RI +HDOWK 6FLHQFHV 5L\DGK 6DXG  
'HSDUWPHQW RI 3DWKRORJ\ DQG 0LFURELRORJ\ \$JD .KDQ 8QLYHUVLW\ +RVSLWDO .DUDFKL 3DNLVWDQ  
'HSDUWPHQW RI 3DWKRORJ\ DQG 0LFURELRORJ\ 6HFWLRQ RI +HPDWRORJ\ 7KH \$JD .KDQ 8QLYHUVLW\ +R  
&RUUHVSROGLQRU

7KLV VWXG\ ZLOO EH KHOSIXO WR GHWHUPLQH WKH SUHYDOHQFH DQG  
SURJQRVWLF VLJQLILFDQFH RI FORQDO HYROXWLRQ DEQRUPDOLWLHV LQ RXU FRK  
RI SDWLHQWV 7KH GHWHFWLRQ RI WKHVH FKURPRVPRDO DEQRUPDOLWLHV LV  
LPSRUWDQW DV RQ WKLV EDVLV ZH ZRXOG EH DEOH WR VWUDWLI\ WKH SDWLHQ  
LQWR JRRG RU EDG SURJQRVWLF JURXS DQG ZLOO EH DEOH WR RIIHU WKHP  
VXLWDEOH WUHDWPHQW RSWLRQ LQ RXU VHWWLQJ

7KH DLPV DQG REMHFWLYHV RI RXU VWXG\ ZHUH WR REVHUYH WKH  
RFFXUUHQFH RI QRQ UDQGRP FKURPRVPRDO DEQRUPDOLWLHV FORQDO  
HYROXWLRQ RWKHU WKDQ RU LQ DGGLWLRQ WR 3KLODGHOSKLD FKURPRVRPH  
FKURPRVRPH T T LQ &KURQLF 0\HORLG /HXNHPLD &0/ DW  
WLPH RI SUHVHQWDWLRQ E\ XVLQJ FRQYHQWLRQDO F\WRJHQHWLF DQG ),6+  
)OXRUHVHVFHQFH ,Q 6LWX +\EULGLJDWLRQ DQG WR LGHQWLI\ QHZ F\WRJHQHWLF

2YHUDOO UHVSQRVH UDWH RI LPDWLQLE PHV\ODWH LQ FKURQLF SKDVH LV  
VKRZQ LQ 7DEOH

5RZOH\ -' /HWWHU \$ QHZ FRQVLVWHQW (FKURQRXV RDO.DQWRUMLDQ + LQDOSD] 0 2  
FKURQLF P\HORJHQRXV OHXNDHPLD LGHQWLYH W\XO W\W\ TXLQDFWLQHEI O\KRUUDW\FHQF\KHU)\  
DQG \*LHPVD VVDLQLQJ 1DWXUH ZLWK YDULDQW 3KLODGHOSKLD FKURPRVRPH  
&RUWHV - 2 'Z\HU 0( &ORQDO HYROXW\%DQ FDUJFKURQLFDBO\ORJHQRXV%PDQ - +RFKK  
OHXNHPLD +HPDWRO 2QFRO &OLQ 1RUWK \$P (XURSHDQ /HXNHPLD 1HW (YROYLQJ FR  
\$QDVWDVL - )HQJ - /H %HDX 00 /DUVRQ 5\$FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD  
UHODWLRQVKLS EHWZHHQ VHFRQGDU\ FKURQLF R\ORJHQRXV OHXNHPLD UHFRPPHQGD  
WUDQVIRUPDWLRQ LQ FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD 8 3DVFKND 3  
6ZROLQ % :HLQIHOG \$ :HVWLQ - :DOGHQV\HY\$RQV\HDJQV\H\%VWDQFH LQ SDWL  
.DU\RW\SLF HYROXWLRQ LQ 3K SRVLWLYH FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD  
WR PDQDJH PHQW DQG GLVHDVH SURJUHVVLRQ (DQF\HU \*HQHW &\WRJHQHW  
8VDPQ 0 6\HG 11 .DNHSRWR \*1 \$GLO 61  
.DQWUMLDQ +0 'L[RQ ' .HDWLQJ 0- 7DOSD] &KURPRVRPD \$KURQLF P\HORLG OHXNHPL  
&KDUDFWHULVWLFV RI DFFHOHUDWHG GLVHDVH DQG LQ FKURQLF P\HORJHQRXV OHXNHPLD  
&DQFHU XHPDWRO RJLFDO DQG F\WRJHQHWLF UHVS  
'UXNHU %- 7DOSD] 0 5HVWD '- 3HQJ % %FKGXQJHU ( HW DO  
(ILFDL\ DQG VDIHW\ RI D VSHFLILF LQKLELW\ (FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD  
LQ FKURQLF P\HORLG OHXNHPLD 1 (QJO - 0HQJ OHFXODU F\WRJHQHWLF FKDUDFWHUL]D  
7DOSD] 0 6LOYHU 57 'UXNHU %- \*ROGPDQ WUDQVIRUPDWLRQ YD V\HQFKURQLF P\HORLG 0  
HW DO ,PDWLQLE LQGXFHV GXUDEOH KHPDWRO RJLFDO DQG F\WRJHQHWLF UHFRPPHQGD  
UHVSQRVHV LQ SDWLHQWV ZLWK DFFHOHUDWHG GLVHDVH (FKURQLF P\HORLG OHXNHPLD UHFRPPHQGD  
UHVSQRVH RI D SKDVH VWXG\ %ORRG &\$0(/,\$ &KURQLF 0\HORLG /HXNDHPLD  
%HQQRXU \$ %HOO=DM + %HQ <RXVVHI < (ORXODWH HILFDF\ LQ DQ SUHYLRXV\ WUHD  
OROHFXODU F\WRJHQHWLF FKDUDFWHUL]D (ORXODWH HILFDF\ LQ DQ SUHYLRXV\ WUHD  
UHDUUDQJH PHQWV LQ FKURQLF P\HORLG OHXNHPLD UHFRPPHQGD (ORXODWH HILFDF\ LQ DQ  
2QFRO .LP '+ 3RSUDGL \* 6ULKDUVKD / .DPHO 5HLC  
2 'Z\HU 0( \*DWWHU .0 /RULD\ [ 0 'UXNHU %1R 2V\WRQ 15DQFH DQ GHULYDWLYH FKURPRV  
'HPRQVWUDWLRQ RI 3KLODGHOSKLD FKURPRVRPH (FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD  
SDWLHQWV ZLWK FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD (FKURQLF P\HORLG OHXNHPLD UHFRPPHQGD  
UHVSQRVHV LQGXFHV E\ LPDWLQLE PHV\ODWH W\K\H\XNHPLD FKURQLF P\HORLG OHXNHPLD &  
OHGLQD - .DQWUMLDQ + 7DOSD] 0 2 %ULHQ (DQV\WJ\UHL\ 0DQJ\WRQHW DQ DWUMLDQ 0DU  
&KURPRVRPD DEQRUPDOLWLHV LQ 3KLODGHOSKLD FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD  
QHJDWLYH PHWDSKDVHV DSSHDULQJ GXULQJ DQ EPDWLQLE WFRPH D\FKURQLF P\HORLG OHXNHPLD UHFRPPHQGD  
SDWLHQWV ZLWK 3KLODGHOSKLD FKURPRVRPH (FKURQLF P\HORJHQRXV OHXNHPLD UHFRPPHQGD \*0(0\$  
OHXNHPLD LQ FKURQLF SKDVH &DQFHU &OLQ 2QFRO  
6\HG 11 8VDPQ 0 \$GLO 6 .KXUVKLG 0 \$GGLWLRQDO  
FKURPRVRPD DEQRUPDOLWLHV LQ 3KLODGHOSKLD SRVLWLYH FKURQLF P\HORLG  
OHXNHPLD +HPDWRO 2QFRO 6WHP &HOO 7KHU