

Appendix 1: Summary of Literature Review Articles

Ref.	Authors	Journal	Study Details	Motivations/Rewards	Barriers/Challenges	Recommendations /Conclusions
8	Baldor RA et al	Medical Education; 2001	Design: Random Survey Population: Family practitioners, general internists and pediatricians in the New England region Sample Size: 701 Level of Students: Undergraduate medical students	-Enhanced enjoyment of practice -Keeping own knowledge up to date -Monetary payment, whether as a modest honorarium or as compensation for lost time/income, was felt to be important by half of sampled physicians.	-Decreased productivity -Increased length of day (median 60 minutes)	-Address negative perceptions and develop appropriate benefits packages to recruit and retain these primary care preceptors
39	Borges NJ, Navarro AM, Grover A, Hoban JD	Academic Medicine; 2010	Design: Literature Review Population: Physicians with careers in academic medicine Sample Size: 41 articles reviewed Level of Students: N/A		-Pressure on academic physicians to generate more of salary through patient care, reducing time for research and/or teaching -Lack of programs to produce physician-teachers -Literature is void of studies evaluating exposure to research in teaching and education. -Literature shows few programs for academic physicians who would like to have a teaching focus -It is possible that many academic centers place more emphasis on research as opposed to teaching, therefore less physicians teach.	
9	Brennan EA, Hanson J, de Gara CJ	University of Alberta Health Sciences Journal; 2006	Design: Survey Population: Physicians involved in clinical	-Enjoyment of teaching -Stay stimulated and current	-Unprepared students and work taking longer to	-Monetary reward, either directly or through departmental

			<p>education at the University of Alberta</p> <p>Sample Size: 120 internal medicine and 85 surgical preceptors</p> <p>Level of Students: Medical students in clerkship</p>	<ul style="list-style-type: none"> -Continue own learning process -Teach because others taught them -Passing on important information and observing student growth were found to be highly satisfying. -Financial reimbursement increased accountability toward students -Majority of clinicians felt that everyone should be rewarded or recognized for teaching while outstanding teachers should be given additional recognition 	<p>complete were viewed as negative aspects of teaching</p> <ul style="list-style-type: none"> -Clinicians were less likely to continue teaching upon being given negative student reviews if they were not being compensated financially. 	<p>practice plans, should be the norm</p> <ul style="list-style-type: none"> -Majority of clinicians felt that everyone should be rewarded or recognized for teaching
10	Dahlstrom , J et al.	BMC Medical Education; 2005	<p>Design: Survey sorted using Q methodology</p> <p>Population: Senior medical clinicians on a teaching list at The Canberra Hospital, Australia</p> <p>Sample Size: 75</p> <p>Level of Students: Undergraduate medical students</p>	<ul style="list-style-type: none"> -Intrinsic motivations -Altruism -Intellectual satisfaction, improve own skills 	<ul style="list-style-type: none"> -Heavy clinical load/too much work -Wasted time -No strong involvement in course design 	<ul style="list-style-type: none"> -Allow teachers to contribute to course development -Allocate time to teaching -Emphasize link between strong teaching and junior doctor outcomes -Remind staff of opportunity to 'advertize' their specialty
35	Dodson, MC	Obstetrics and Gynecology; 1998	<p>Design: Survey</p> <p>Population: Obstetricians and Gynecologists teaching clerkship students in six Michigan cities</p> <p>Sample Size: 163</p> <p>Level of Students: Medical students in clerkship</p>	<ul style="list-style-type: none"> -Seminars or conferences to improve teaching skills -Potential rewards discounts on computers 	<ul style="list-style-type: none"> -Negative impact on patient flow 	<ul style="list-style-type: none"> -Financial remuneration may not be key to attracting and retaining volunteer faculty.
11	Fulkerson PK., Wang-Cheng R	Family Medicine; 1997	<p>Design: Survey</p> <p>Population: Community-based family physician preceptors involved in teaching of</p>	<ul style="list-style-type: none"> -Personal satisfaction (84%) -University affiliation -Discounts -Workshops 		<ul style="list-style-type: none"> -Develop a preceptor recognition/reward program using input from preceptors themselves

			clerkship students Sample Size: 120 Level of Students: Medical students year 3			
2	Gerrity, MS et al	Journal of General Internal Medicine; 1997	Design: Literature review Population: Physicians involved in clinical-teaching Sample Size: 20 articles reviewed Level of Students: Undergraduate medical students, residents	-Intrinsic rewards: observing outcomes of teaching, share satisfaction derived from patient care with students -Role model opportunity is source of satisfaction -Physician self-reflection on skills as they observe how they teach students -New perspectives obtained from students or residents -Learners may contribute to practice -Patients may feel empowered by opportunity to help learners	-Possible loss of productivity and time -Patient may not voice all concern in presence of learner -May interfere with physician relationship with patients -Clinician-teachers may experience doubts about their skill as teachers	-Find ways to enhance own teaching skills -Take advantage of faculty-development programs offered by one's medical center or professional organizations -Collaborate and learn strategies for teaching from other clinician-teachers -Clinicians should find time to share their interests with their students and to learn about student interests -Give clinician-teachers faculty appointments -Include clinician-teachers in educational policy and program development
12	Gray J, Fine B	British Journal of General Practice; 1997	Design: Survey Population: General Practitioners in London, England Sample Size: 310 Level of Students: Undergraduate medical students	-Opportunity to learn from own teaching is a reward -May enhance doctor-patient relationship -Helping with students' personal development -Developing own teaching skills -Feeling that teaching makes everyday work of general practice more interesting	-90.7% of GP's reported lack of time as factor -59.9% reported lack of space as a problem -34% reported lack of confidence in their own knowledge -25.3% felt that teaching may have an adverse effect on patient care -More undergraduate teachers felt that remuneration was inadequate -Small number of	-Provision of locum cover, adequate financial reward for teaching, teacher training, and tutor's groups would be well received.

					GPs felt they may be unsupported in teaching endeavors by their practice partners	
13	Grayson MS, Klein M, Lugo J, Visintainer P	Journal of General Internal Medicine; 1998	Design: Cross-sectional survey Population: Community-based primary care physicians serving as preceptors at New York Medical College Sample Size: 185 Level of Students: Medical students years 1-2	-More job satisfaction -Kept up to date through contact with students -Held in higher esteem by patients	-Decline in number of patients -Potential increase in cost to the practice	-Being able to provide physicians with an experience that will enhance their professional growth and satisfaction may be a compelling recruitment benefit
14	Hartley S, Macfarlane F, Gantley M, Murray E	British Medical Journal; 1999	Design: Qualitative semistructured interview Population: General practitioners in north London, England who taught clinical skills to medical students Sample Size: 30 Level of Students: Undergraduate medical students	-Overall positive effect on morale -Contact with enthusiastic students -Increased time with patients -Improved clinical practice -Improved teaching skills -Improved image of the practice	-Lack of time and space -Teachers thought that "short cuts" in their clinical examination of patients were not appropriate for students to learn. -Unsupportive practice partners -Problems recruiting patients to participate with students	-Positive outcomes rely on providing good quality teacher training to novice teachers -Provide ongoing support and networking opportunities to all teachers -Provide adequate funding to permit teachers to reduce their clinical commitments -Encourage all doctors within a practice to commit to teaching -General practitioner teachers reported an increase in morale, improvements in clinical skills, and changes in clinical practice and in practice infrastructure as a result of teaching and training. -Positive effects on morale and clinical practice may be important for sustainable

						teaching and continuing medical education
15	Hill N, Wolf KN, Bossetti B, Saddam A	Journal of Allied Health; 1999	Design: Survey Population: Various physicians acting as "clinical instructors", representing five allied health programs in Columbus, Ohio Sample Size: 430 Level of Students: Undergraduate medical students	-Observing student development is rewarding	-Low student motivation/poor professional behaviour is frustrating -Benefits of teaching reduced by increased pressure due to restructuring of health care.	-Study supports need for further preparation of students entering clinical setting -Reward system for preceptors
16	Hoban J et al	Academic Medicine; 1996	Design: Survey Population: Faculty members at the Bowman Gray School of Medicine in North Carolina Sample Size: 348 Level of Students: Undergraduate medical students, residents	-Personal enrichment -Recognition/reward -Funds to improve teaching		70% of 348 survey respondents favoured establishing a teaching-incentive program at the Bowman Gray School of Medicine. Suggested incentives included 1) "recognition of outstanding teaching by department; 2) "dean's teaching list"; 3) "master teacher award"; 4) "letter of appreciation"; 5) "a financial award . . . for professional travel, books, dues . . ."; and 6) "funds to develop instructional material."
36	Kumar A et al.	Journal of General Internal Medicine; 1999	Design: Survey Population: Clerkship directors or coordinators of pediatrics, family medicine, and internal medicine in all U.S. medical schools and administrators of pediatrics clerkships in 16 Canadian medical	-Pediatrics, family and internal medicine programs surveyed at U.S. medical schools and pediatrics at Canadian schools -Monetary payment offered 13-22% of programs -Educational opportunities 70-89% of programs -Academic		-Trim roster of clinical faculty, leaving only those who contribute significantly to the teaching programs, and redistribute any payments for teaching among smaller number of teachers

			schools Sample Size: 338 respondents Level of Students: Medical students in clerkship	appointments 90- 95% of programs -Special recognition events 62-79% of programs -Appreciation letters 74-84% of programs		
17	Kumar A, Kallen DJ, Mathew T	Teaching and Learning in Medicine; 2002	Design: Survey Population: Volunteer clinical teachers in pediatric, family practice and internal medicine clerkships at medical schools across the United States Sample Size: 257 Level of Students: Medical students in clerkship	-Personal satisfaction highest rated -In contrast, payments, gifts or services judged to be less important -Some emphasis on rebates and rewards		
37	Langlois JP	Family Medicine; 1995	Design: Survey Population: Community-based preceptors for the University of North Carolina's third- year family medicine clerkship Sample Size: 112 Level of Students: Medical students year 3	-Payment, financial aid and textbooks are possible incentives for participation in teaching		
38	Latessa R et al.	Family Medicine; 2008	Design: Survey Population: Primarily General Practitioners who act as community- based preceptors for medical students across the state of North Carolina Sample Size: 817 Level of Students: Undergraduate medical students	-Interest in promoting family medicine -High level of satisfaction with teaching	-Impaired patient flow -Increased working time -Less satisfied with income while with students	-Tailor support to meet individual preceptor needs
18	Latessa R et al.	Academic Medicine; 2007	Design: Survey Population: Community-based primary care preceptors in the North Carolina Area Health	-High level of satisfaction with teaching -Value placed on intrinsic reasons for precepting (enjoyment of	-Negative impact of students on professional life	-Tailoring support to meet individual preceptor preferences can maximize resources and encourage

			Education Centers system Sample Size: 1428 Level of Students: Undergraduate medical students	teaching) rather than extrinsic rewards (such as access to library resources).		preceptor retention
19	Levy BT, Gjerde CL, Albrecht LA	Academic Medicine; 1997	Design: Survey Population: Family medicine preceptors at the University of Iowa College of Medicine Sample Size: 130 Level of Students: Medical students year 3	-Interest in training and access to computer-based information -Satisfaction of teaching (Intrinsic motivations) -Positive interactions with students	-More time spent in practice due to teaching (87%), an average of 51 more minutes. -An average of 1.4 fewer patients seen (31%), -Loss of practice income (25%)	-Medical schools need to recognize the valuable contributions of preceptors and find ways to support them
20	May M, Mand P, Biertz F et al	PLoS One; 2012	Design: Survey Population: German family physicians who teach undergraduate medical students in their practices Sample Size: 523 Level of Students: Undergraduate medical students	-Contact/affiliation with the local university (rural physicians) -'Helping others' was a predominant motive -Interest in transferring knowledge -Desire to improve medical education -Promote family medicine -Stay up to date -Material compensation was rated as being of little importance	-Lack of time listed as only relevant adverse motivational factor	-Increase physician involvement in curriculum development
21	Molodysky E, Bunker J, Lee C, Sekelja N.	Australian Family Physician; 2006	Design: Survey Population: General practitioners teaching undergraduate medical students in New South Wales, Australia Sample Size: 195 Level of Students: Undergraduate medical students	-Sense of duty -Enjoyable personal aspect of contact and sharing knowledge with students -Allowed physician to keep up to date	-Lack of time -Competing commitments -Lack of opportunity to teach	-Do not rely on GPs self selecting as teachers -Active recruitment and retention strategies may be needed
22	Moorhead R, Brett T, Arnold-Reed D, Saldanha M	Medical Teacher; 2012	Design: Survey Population: Teaching general practitioners (urban and rural) from the Notre Dame School of	-Thirty-six (62%) of respondents reported that teaching helps a physician reflect and analyze their own clinical practicing. -Thirty-six (62%) felt	-Fifty-six (97%) reported that taking medical students created time pressure/slowed down the practice -26 (45%) felt there	-To maintain general practice interest in teaching, it may be useful to tailor educational support through an

			<p>Medicine in Western Australia Sample Size: 58 Level of Students: Undergraduate medical students</p>	<p>they gained fresh ideas and knowledge from students they taught -Altruism seemed to drive 27 (47%) respondents to teach -29% indicated teaching as an opportunity to advocate general practice as a career</p>	<p>was a loss of income/poor remuneration for teaching.</p>	<p>appropriately trained academic general practitioner frequently visiting teaching practices</p>
23	Prichard D, Collins N, Boohan M, Wall C	Teaching and Learning in Medicine; 2011	<p>Design: Survey Population: Nonconsultant hospital doctors in a major Irish teaching hospital Sample Size: 139 Level of Students: Undergraduate medical students</p>	<p>-Male vs. female physicians equally felt that teaching medical students is a responsibility of all hospital doctors -There was no significant gender difference in proportion of physicians who enjoyed teaching medical students -Males and females equally felt that all doctors, irrespective of seniority, are valuable teachers for undergraduates.</p>	<p>-A greater proportion of male vs. female doctors had previous educational training, although this was not statistically significant. -In three items of the differential scale there was a statistical difference between the genders' responses, with male doctors reporting a significantly higher mean score than female in the following statements: "I feel my clinical knowledge is adequate for teaching undergraduates," "I feel confident in my role as an educator," and "I think that I am a good clinical teacher."</p>	
24	Rutter H, Herzberg J, Paice E	Medical Education; 2002	<p>Design: Literature review Population: Physicians and dentists who teach Sample Size: N/A Level of Students: Undergraduate medical students, residents</p>	<p>-Stress reduction</p>		
25	Scott I, Sazegar P	Medical Teacher; 2006	<p>Design: Survey Population: Family medicine community preceptors in</p>	<p>-Joy in teaching and passing knowledge to students. -Student enthusiasm is invigorating and</p>	<p>-Practice situation (space, patient population, times in the office) considered a barrier</p>	

			Greater Vancouver Sample Size: 116 Level of Students: Medical students years 1-2	increases enjoyment of medicine. -Being able to teach communication skills to students.	-Workload too high -Unaware of teaching opportunities	
26	Starr S et al.	Academic Medicine; 2003	Design: Focus group study Population: Community preceptors from various specialties representing 11 schools of medicine in New England and New York State Sample Size: 35 Level of Students: Medical students and residents	-Feeling of satisfaction in teaching -Responsibility to teach -Sharing clinical experience -Few interested in receiving payment -Some would appreciate acknowledgement from the university.		-Genuine recognition for teaching efforts by medical school, specifically in the form of faculty development opportunities
27	Starr S et al.	Teaching and Learning in Medicine; 2006	Design: Survey Population: Community physician preceptors of pre- clinical students associated with University of Massachusetts Medical School Sample Size: 127 Level of Students: Medical students and residents	-Satisfaction of teaching -Knowledge of abilities to teach -Belonging to a community of teachers -Receiving awards for teaching -Responsibility to teach		-It is arguable that well being is enhanced by increasing the extent to which physicians experience meaning in their work. Rewarding and supporting physicians to teach may be a way to increase meaning and job satisfaction
4	Sturman N, Rego P, Dick ML	Medical Education; 2011	Design: Qualitative semistructured interview Population: General practitioners in Brisbane-based urban practices who teach students from the University of Queensland medical program Sample Size: 60 Level of Students: Medical students year 3	n = 60 GPs surveyed -Intellectual stimulation, 31(52%) -Intrinsic satisfaction of teaching, 26(43%) -Company of young, enthusiastic students, 20(33%) -Exposure to students' knowledge, 19(32%) -Opportunity to showcase general practice, 17(28%) -Discharging obligation to teach, 15(25%) -Advantages to patients who participate in teaching consultations,	n = 60 GPs surveyed -Time management, 50(83%) -Concerns about patients, 28(47%) -Mental fatigue, 25(42%) -Challenges intrinsic to practice-based teaching, 24(40%) -Adverse student factors, 22(37%) -Exposing general practice, 15(25%) -Possible difficulty in providing and consenting patients to active learning opportunities for students	-Recruitment and retention strategies should promote the rewards of teaching -Teacher training should respond to the costs and challenges of practice-based teaching

				13(22%)		
40	Sturman N.	Australian Family Physician; 2011	Design: Qualitative semistructured interview Population: General practitioners who teach students from the University of Queensland medical program Sample Size: 60 Level of Students: Medical students year 3		-Concerns related to assessing students fairly: "How good are they meant to be?" -Concerns over obtaining consent from patients to have medical student present -Dilemma over maintaining patient confidentiality when pertinent, but personal psychosocial issues had been revealed previously	-Identify student before seeking patient consent for teaching, or ask student to seek patient consent -Model skill of seeking consent in difficult circumstances -Acknowledge that patients may be reluctant to refuse consent or later regret having consented -Maintain patient confidentiality in teaching consultations of sensitive, previously divulged information
41	Thompson C, Dogra B, McKinley R	Education for Primary Care; 2010	Design: Survey Population: General practitioners in Shropshire, England Sample Size: 145 Level of Students: Undergraduate medical students		-In the case of this study, GPs did not feel competent to teach all areas of psychiatry	-Further work is indicated to look at what level of knowledge can be reasonably expected to be provided by GPs and what areas best reflect their clinical practice and caseload.
28	Ullian JA, Shore WB, First LR	Academic Medicine; 2001	Design: Survey, Interview Population: Physicians involved in the Interdisciplinary Generalist Curriculum (IGC) project across 10 medical schools in the US Sample Size: 2400 Level of Students: Medical students years 1-2	-Possible rewards of recognition and appreciation desired -Joy in teaching	-Patient flow disrupted -Workload increased -Income decreased	
29	Van Ham I, Verhoeven A,	European Journal of General Practice; 2006	Design: Literature review Population: General	-Being involved in teaching medical students was a factor that increased the job		

	Groenier K et al		practitioners Sample Size: 24 Level of Students: Undergraduate medical students	satisfaction of GPs		
30	Vath BE, Schneeweiss R, Scott CS	The Western Journal of Medicine; 2001	Design: Survey Population: Physicians in the Pacific Northwest who teach medical students Sample Size: 333 Level of Students: Medical students years 1-2	-Joy of teaching students most important factor -Skills sharpened when teaching medical students	-Workload increased (63%) -Reduced time for teaching (56%) -Administrative duties can make it difficult to volunteer	-Medical schools must identify wider berth of physicians willing to teach and reward these teachers accordingly. -Address need for ongoing recognition of volunteer teachers
42	Vinson DC, Paden C	Academic Medicine; 1994	Design: Survey Population: Family physicians associated with the University of Missouri-Columbia School of Medicine Sample Size: 46 Level of Students: Medical students years 3-4		-Increase in time at work (average 46 minutes per day) -5/46 Preceptors noted decreases in billed charges	
31	Vinson DC, Paden C, Deveras Sales A et al	Journal of Family Practice; 1997	Design: Survey Population: Generalist physicians in community based practice in the United States Sample Size: 2074 Level of Students: Undergraduate medical students	-Physicians who had received part of their medical school education in a community setting were more likely to teach students in their practice. -Physicians whose practices were closer to medical schools were more likely to teach -Only 9% of physicians reported being paid for teaching commitments	-Teachers noted a 30-minute (median) lengthening of workday when a student was present -30% saw fewer patients per day with a student in the practice -Solo practitioners were less likely to be involved in teaching -79% of surveyed physicians reported receiving 2 days or less of teacher training -Loss of patient-care productivity is substantial with presence of student -Only 9% of physicians reported being paid for teaching.	-Train volunteer faculty to teach more effectively as it may be difficult to fully reimburse the time a busy practitioner dedicates to teaching

43	Whiting D	Journal of Medical Ethics; 2007	Design: Key informant Population: Medical educators who teach medical students Sample Size: N/A Level of Students: Undergraduate medical students		-May be cases where medical educators encounter students with inappropriate attitudes. i.e. Poor attitude toward those of a different race, ethnicity, gender, etc.	-Medical schools should ensure that measures are in place to reliably assess attitudes in students
32	Wilson A, Fraser R, McKinley RK et al	British Journal of General Practice; 1996	Design: Survey Population: General practitioners associated with Leicester Medical School in the UK Sample Size: 166 Level of Students: Undergraduate medical students	-Surveyed practice-based teachers were likely to be highly supportive of academic departments setting explicit educational requirements. -Most practice-based teachers retain enthusiasm for being involved in high quality teaching.	-139 (89%) of doctors felt that present levels of remuneration were inadequate for time commitment -113 (87%) of doctors felt that time pressures in teaching practices had increased from 1990-1996 -40% of lead teachers felt they have less enthusiasm for teaching and have encountered more resistance from their partners.	-Provide protected time for teaching in general practice -Appropriate funding for reduced list sizes due to teaching time
33	Wooliscroft JO, Harrison RV, Anderson MB	Teaching and Learning in Medicine; 2002	Design: Survey Population: Award-winning clinical teachers from US medical schools Sample Size: 949 Level of Students: Medical students, residents and fellows	-Intrinsic incentives for teaching increase as the level of the student increases	-Institutions tend to provide supportive teaching environments, but do not reward teaching financially	
34	Wright SM, Beasley BW	Mayo Clinic Proceedings, Mayo Clinic; 2004	Design: Prospective cohort and survey Population: Physician faculty members hired at the assistant professor level Sample Size: 183 Level of Students: Medical students, residents and fellows	-Physicians with stake in medical education value 'helping others' as main incentive compared to scientifically active physicians who value self-expression more highly		-Understanding inspiration for physicians may help medical leadership to better motivate and relate to their physician workforce

